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ABSTRACT

This is an activity book designed for students in grades 3 through 6. These activities incorporate science themes and cooperative learning. Students explore topics by working with others as team members to complete the science activities. This book contains five units on the following topics: weather, insects, plants, dinosaurs, and space. Each unit contains hands-on activities, such as games, riddles, and a graphic organizer, with the main objective being for students to enjoy and appreciate science through cooperative groups. Each unit enables students to meet and work with other classmates having similar interests. (JRH)

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ED 396 941

SCIENCE & COOPERATIVE LEARNING

BY BETTY EHRET

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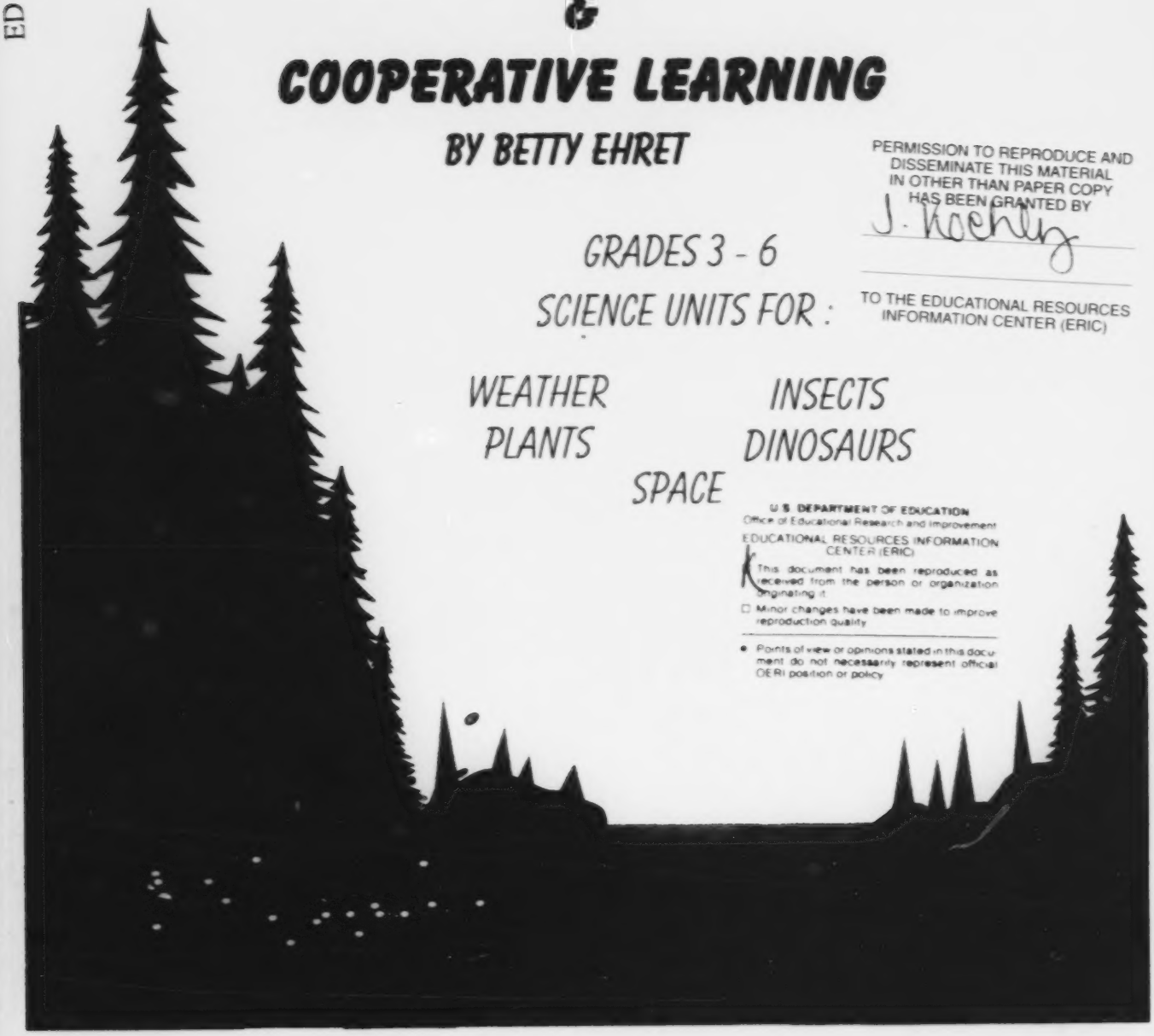
GRADES 3 - 6

SCIENCE UNITS FOR :

WEATHER
PLANTS
INSECTS
DINOSAURS
SPACE



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Science
&
Cooperative Learning

by Betty Ehret

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Science
&
Cooperative Learning

Science & Cooperative Learning is an activity book designed for students in grades 3 through 6. These activities incorporate science themes and cooperative learning. Through cooperative learning, students explore topics by working with individuals as team members to accomplish the science activities.

Each unit is designed with hands-on science activities. The main objective is for students to enjoy and appreciate science through cooperative groups. Each unit enables students to meet and work with other classmates having similar interests. These activities were fun to write and we hope you will enjoy completing them.

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Cooperative Learning

Cooperative learning is more than just "group work." The five key elements it involves include: Positive Interdependence, Individual Accountability, Group Processing, Social Skills, and Face-to-Face Interaction. When all key elements are present numerous successes are achieved.

1. **Positive Interdependence:** In Cooperative Learning, each group member needs to rely on another group member to succeed and contribute his/her own share of the work. To accomplish this, the teacher (or group) can divide up the tasks by assigning roles. Limited resources also lead to group positive interdependence, such as 1 sheet of paper, 1 glue stick, etc. Another approach is to offer rewards to the group based on member contribution and success. (These rewards can be privileges, certificates, treats, etc)

2. **Individual Accountability**: Each group member needs to be held accountable for the instruction. Within a cooperative learning project the teacher can determine individual accountability by tests, having each member use a different colored pencil, group evaluating if goals met, and various cooperative learning activities, such as Numbered Heads.

3. **Group Processing:** Group processing is a crucial element. The groups and teacher evaluate the progress made within each group through a formal process. The group evaluates their performance on each social skill emphasized and concepts learned and sets goals for future lessons.

4. **Social Skills:** The teacher explains the need for the social skill to be emphasized, discusses how the application of the skill will "Look and Sound" during the lesson, models the skills, observes during the cooperative learning activity, allows student reflection and feedback, and discusses the results with the groups and class.

5. **Face-to Face Interaction:** The students within the cooperative learning groups discuss and complete the activity. The students are required to look at the speaker during Face-to-Face Interaction. This allows the listener and speaker to observe if understanding is achieved.

Cooperative Learning Structures and Activities

The following cooperative learning structures and activities are utilized in this science activity book. Remember, processing or group evaluation is important to complete following the activities.

1. CORNERS--an activity to introduce a topic, form random groups. The teacher decides what topics the students will respond to, and places the topics/illustrations around the room. The student writes his/her choice on a sheet of paper, then proceeds to the "corner" where that topic is placed. Within the corners, the students can discuss why they chose that particular topic, listening to others.

2. LINE-UP-an activity where the students line up in a given order, without talking. This order can relate to month of birthday, years in school, number of family members, etc.

3. BRAINSTORMING--an activity encouraging creativity and allows for gathering of numerous answers. The team responds with as many ideas on a given topic, as a recorder writes all ideas expressed, without any judgement.

4. QUALITY INITIALS-the team members work creating new names for fellow members, using initials from first and last name. Example: Betty Ehret become Bouncing, Excitable Betty Ehret.

5. NUMBERED HEADS-a simple 4 step activity. Step 1, the students number off from one to four (fewer if less members in group). Step 2, the teacher poses a question. Step 3, the team discusses and comes to a consensus on an answer. Step 4, the teacher calls a number to stand and respond.

6. ROUND TABLE-an activity in which the teacher poses a question or task for the team of students and the students pass a sheet of paper and a pencil around to record responses. The teacher may use 1 sheet of paper or multiple sheets. Team members may only assist a fellow member if help is requested.

7. ROUND ROBIN-an activity where the teacher poses a question or task for the team of students and the students orally respond. Team members may only assist a fellow member if help is requested.

8. RIDDLE RHYMES-an activity having the students create as many two word rhymes as possible/ and turning them into riddles. Examples: A bee = a Nectare Collector; butter = Bread Spread; an immobile large vehicle = a stuck truck.

9. GUESS A FIB-an activity where students state 3 facts about themselves. However, one is a fib, and the others try to guess which one it is. (Adaptable to story characters.)

10. GALLERY TOUR-an activity to respond positively to class/individual/team projects. The project is displayed with a sheet of paper next to it for teams to record questions or comments regarding the project. At the teacher's signal the groups move from one location to another. After the team's response, the recorder also writes down the team's name. The teacher needs to keep an even flow, such as all moving in a clockwise motion.

11. TEAM NOTEBOOK/HANDSHAKE/RAP-activities to develop team identity and belonging. Consensus rules apply here. Each member must contribute and the group cannot proceed without consensus.

12. PEOPLE HUNT-an activity for students to look for similar characteristics among class members. The student first fills out own characteristics and then when time signal is given, begins searching around the room for someone with similar characteristics.

13. FORMATIONS-an activity involving student mobility. Each team forms some time of figure/machine. However, each person must be touching another, and the formation has to make some kind of motor noise. (The students are not allowed to talk during the activity.) Examples: forming a home appliance, make a new invention.

14. DRAW WHAT I WRITE-an activity similar to Draw What I Say, but the students drawing the picture have to write the directions for duplicating the drawing. Afterwards the pairs compare the drawings and discuss how it could have been communicated better.

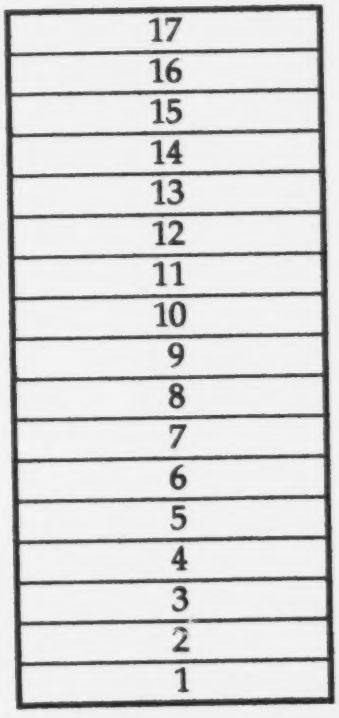
15. CHALK TALK-an activity where each group has a chalkboard and group members take turns answering questions posed to the team. If individual group chalkboards are not available, divide the class chalkboard into sections so each group has a section to record a response.

Weather Unit

After your group completes an activity, write in the date completed and fill in the appropriate section on the Rain Gauge.

Activity	Date Completed
1. Corners	_____
2. Team Name	_____
3. Weather Hunt	_____
4. Weather Walk	_____
5. Stormy Weather Graphic Organizer	_____
6. Storm Word Splash	_____
7. Weather Myths	_____
8. Group Weather Poetry	_____
9. Design a Weather Instrument	_____
10. Weather Instrument Tour	_____
11. Weather Rhebus	_____
12. Weather Rhebus Tour	_____
13. Cloud Chart	_____
14. Weather Log	_____
15. Weather Riddles	_____
16. Weather Game	_____
17. Weather Broadcast	_____

Rain Gauge



11

Group Processing Sheet

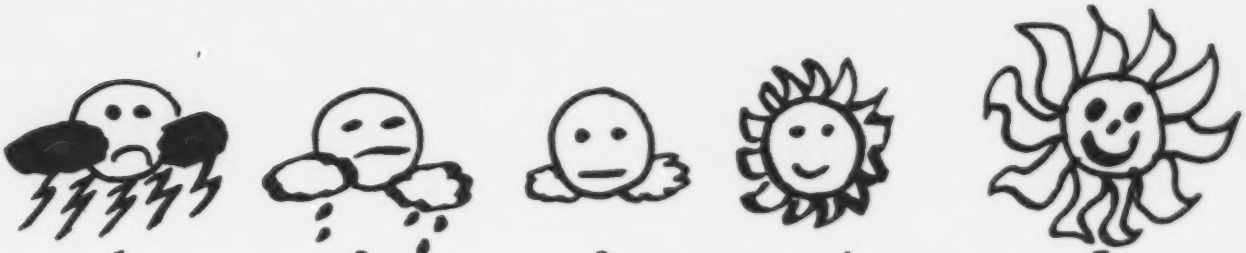
Each group completes a processing sheet upon completion of a weather activity. Team members within each group should take turns recording the group's responses. (Individual groups may choose to design their own processing sheet.)

Team Name _____
Activity _____ **Date** _____

Team Members _____
_____
_____
_____

. . . . . .

Rate your group from 1 to 5 on the following skills: (See chart)



1 2 3 4 5

Working quietly _____ because _____.
Group participation ____ because _____.
Understanding concept ____ because _____.
Skill to improve _____ because _____.

Teacher comments:

Corners Activity

Materials:

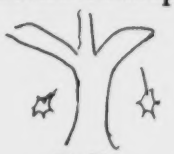
paper pencil
season pictures

Procedure:

1. Teacher places illustrations of the four seasons: Spring, Summer, Fall and Winter strategically 4 Corner areas around the classroom. (See possible illustration examples below.)

Summer

Spring



Fall

Winter

2. Teacher poses a question to the class: Which season is your favorite and why?

3. Students write response on a sheet of paper. This way they choose their own, not a friends.

4. The teacher then directs the students to go to the Corner-Season Illustration with their paper with reasons on it.

5. The teacher pairs up the students and they share their reasons for choosing that season, listening carefully to partner as they will need to paraphrase partner's comments later.

6. The teacher then forms groups of four within corners (or groups pairs with other seasons based on responses).

7. Each students paraphrases partner's reason for choosing the season to the new pair. This continues until all responses within the new foursome are shared. The teacher may choose to designate a 2 minute sharing for each partner, calling out the time limit and signalling the next sharing time

8. Following the group sharing period, one member from each new group of four may share team's responses to entire class. A new group has now been formed to complete the **Weather Unit**.

Design a Team Name

Each new group designs a Team Name, related to weather. After forming your new group using the Corners Activity, you need to develop a team name and a team poster.

1. Use the chart below and the Round Table format, to take turns filling in your respective corner area, answering the questions below.

2. Upon completion of the questions, find all of the common responses (responses all agree with). Think of a creative name for your group using at least 2 or 3 of the common responses.

3. Check with your teacher after creating name.

4. Design a team poster, including: team name, illustration, and individual team members. Each member needs to help with the poster.

Questions:

1. What is your favorite color?
2. What is your favorite kind of precipitation?
3. What type of storm were you in most recently?
4. What kind of weather do you prefer?
5. What is your favorite weather-related story?
6. What is your favorite activity in different weather conditions?
7. What type of cloud do you like?

Member 1	Member 2	Member 3	Member 4	Common Responses

Weather Hunt

Instructions:

Within the next few minutes try to find people who meet the following guidelines. The person who fits the guidelines has to write his/her own name on your sheet. No duplication of names.

Guidelines	Person
1. Was in a hailstorm this year	----------
2. Witnessed a tornado first-hand	----------
3. Knows the steps in a tornado drill	_____
4. Has relatives that were in a hurricane	----------
5. Can describe a cumulus cloud	----------
6. Can describe a stratus cloud	----------
7. Knows the name of a local weatherman	----------
8. Knows the term, "Meteorologist"	----------
9. Has read Cloudy with a Chance of Meatballs	----------
10. Has read It Looks Like Spilt Milk	----------
11. Was in a blizzard this year	----------
12. Made a snowman within the last 2 years	_____
13. Can make fog in a bottle	----------
14. Can describe a cirrus cloud	----------
15. Enjoys a cold winter sport	----------

Weather Walk

Instructions:

As a team, observe your surroundings, and record exact locations meeting the following descriptions (within the specified time):

Description	Item & Location
1. A shelter from the wind	
2. Something bending toward the sun	
3. Something hidden from the sun	
4. A shelter from a tornado	
5. A cool place	
6. A hot place	
7. A sign of good weather	
8. A weather instrument	
9. A shelter from rain	
10. Something that reflects sunlight	
11. Something that absorbs the sunlight	
12. A sign of wind erosion	
13. An indication of wind strength	
14. A bad place for shelter from lightning	
15. Name the cloud type and explain	
16. Something that bends in the wind	
17. A place where icicles could form	
18. An indicator that wind is blowing	
19. Something that soaks up the rain	
20. Something that won't bend in the wind	

Stormy Weather Graphic Organizer

Materials:

weather books	paper
reference books	pencil

The possible Roles needed for this activity include: **Recorder** (writes responses), **Reporter** (voices responses to whole class), **Time Keeper** (watches time and keeps group on task), **Encourager** (encourages all members to participate using questions to elicit responses), and **Checker** (verifies if every group member agrees).

Procedure:

1. As a group, design a graphic organizer to show similarities and differences between a **Hurricane** and a **Tornado.** The team may design a chart or a Venn-diagram.

2. The team researches the differences between the two storms in reference and weather books.

3. The team recorder writes the responses on the graphic organizer the team designed.

Stormy Weather Graphic Organizer

Designed by _____

Weather Word Splash

This technique utilizes vocabulary terms and concepts covering a unit on weather. These terms are "splashed" at various angles on a chart, worksheet or transparency. Teachers and/or cooperative groups can design their own Word Splash as a review or prereading assignment.

Cooperative Learning Activity

1. Each group of students predict how the terms are related to the weather topic or title, by writing phrases adjacent to the term.

2. After a given amount of time, approximately 10-15 minutes, the student recorder in each group draws a rectangular box around the terms not completed.

3. The group reads together the article, film or recording on weather.

4. Checking the group's prediction: If the prediction was correct, the group places a * by the phrase. If the prediction was wrong, the group draws a single line through the phrase and writes the correct response next to the word.

5. When finished the group reviews quickly the accurate information, so everyone in the group knows the correct response.

6. The teacher reviews the concepts using **Chalk Talk.** Each group has a chalkboard and group members take turns answering questions. If individual group chalkboards are not available, divide the class chalkboard into sections so each group has a section to write a response.

7. Possible cooperative roles for this activity include: Recorder, Reader, Reporter, Checker, Time Keeper.

30 km

Group_____

Thunderhead

10 mph

300 mph

Satellite

0.5 km

Tornado

Eye

Rotating mass

Surface of the sun

650 km

175 mph

Hurricane

Storms

Storms occur around the world constantly, with thunderstorm causing the most violent changes in weather. Thunderstorms are common during spring and summer.

Thunderstorms occur under two conditions. First, rapidly rising currents of warm air, updrafts, must be present. Secondly, these currents must contain heavy amounts of water vapor. As the air currents rise, the clouds build up higher and higher and a huge dark cloud called a thunderhead forms. A thunderstorm forms inside this thunderhead about 10 miles high in the atmosphere.

Electrical charges build up inside the clouds as the warm air rises. These charges jump from one cloud to another or between a cloud and the earth. Lightning is the movement of these charges from place to place and can be very dangerous. In fact, a lightning bolt is as hot as the surface of the sun.

A tornado is a violent windstorm that usually lasts only a short period of time. The width of a tornado is approximately 0.5 km, with winds up to 300 miles per hour. Tornadoes most likely occur within thunderheads during the spring and summer under these conditions: warm, moist air is close to the ground with a layer of cold, dry air above it. The cold air forces the warm air upward. Then if a rapidly moving cold front moves into the area, the warm air becomes trapped between the two layers of cold air. Some of the warm air breaks through and rushes upward, forming a twisting mass of air. Tornadoes can be destructive and unpredictable. Tornado watches are issued if the conditions are likely for a tornado to occur; while tornado warnings indicate a tornado has been sighted. People should find shelter and never try to outrun a tornado.

A hurricane is another violent storm containing many thunderstorms over the ocean or in a tropical area. Hurricanes develop more slowly than tornadoes, but last longer, and can do more damage. A hurricane is also a rotating mass of air covering a broader area than a tornado. A hurricane's average width is approximately 650 km, with winds up to 175 miles per hour. The calm region in a hurricane is its center or "eye," and is approximately 30 km wide. Meteorologists track thunderstorms using radar and satellite pictures.

Weather Myths

Materials:

sample myths	paper
pencil	markers
drawing paper	art supplies

Procedure:

1. The group chooses a myth to study. Students may find a quiet section or area and read **Knees Together**. During **Knees Together**, the students sit, knees touching and read aloud quietly.

2. Upon completion of the myth, the team members discuss the story elements: characters, plot, setting, problem, events, resolution.

3. The group then selects one of the possible myths listed to create:

Why Wind Blows
How Lightning Strikes
Why Thunder Roars
How Seasons Came to Be
How Rainbows are Formed
Why Air is Invisible
How Hail is Formed
Why it Snows

4. The groups need to include the elements of a story within their myths: characters, plot, setting, problem, events, resolution.

5. After the rough draft is completed, the students using **Round Table**, pass around one of the pages at a time, checking for spelling, grammar, and punctuation errors. Each complete pass of the page should be centered on <u>one</u> of the editing practices at a time.

6. Upon completion of the editing phase, the group's final product may be written in ink or typed. The group may choose to create a booklet with illustrations or act out the story in play form with props.

7. The fellow groups respond with positive comments to the product, a Booklet or Play.

Weather Myths Project Response

Group Responding: _____

Comments:
Story understanding: _____
_____
Creativity: _____
_____

Group Responding: _____

Comments:
Story understanding: _____
_____
Creativity: _____
_____

Group Responding: _____

Comments:
Story understanding: _____
_____
Creativity: _____
_____

Group Responding: _____

Comments:
Story understanding: _____
_____
Creativity: _____
_____

Group Responding: _____

Comments:
Story understanding: _____
_____
Creativity: _____
_____

Group Weather Poetry

Materials:

paper	pencil
markers	drawing paper

Procedure:

1. Using the **Round Table** Format, the group members take turns completing an Acrostic or Name Weather Poem. In **Round Table** the students pass a single sheet of paper and a single pencil around the group to record responses.

2. Each member has the paper and pencil until he/she records a response. (In this case, until one line of the poem is complete.)

3. Each line of the poem requires a minimum of 3 words, with each term describing the subject of the poem, using the first letter to begin the phrase.

Example:

Severe thunderstorms occur in the U.S.
Tornados form from thunderheads
Over oceans, hurricanes form
Radar detects violent storms
Many homes are destroyed due to storms

4. Upon completion of rough draft of poem, the students then check for spelling errors.

5. The students print or type the final copy, adding a colorful border and illustration. Group name and individual names also appear on the final product.

Design a Weather Instrument

After studying these various instruments: hygrometer (wet and dry bulb thermometer), rain gauge, anemometer, wind vane, wind sock, thermometer, and barometer, and their purposes, your group will design and construct one of these instruments. (Groups can select by choice or draw out of a "hat".) Information for designing a homemade weather instrument can be found in weather books, science textbooks, and reference books. Consult your teacher and local library.

Data Sheet

Group_____
Weather instrument chosen_____
Date construction began_____ Construction completed_____
Results began_____ Results completed_____

Complete the **Materials Chart below, describing the necessary materials, where the materials can be obtained, possible costs, and team member responsible:

Materials Chart

Materials/Tools	Source	Cost	Team member

Weather Instrument continued

Procedure:

List the steps your group will take to complete the weather instrument and the member responsible. Number the steps in the order you will complete them:

Weather Instrument Procedure:

Weather Instrument continued

Observation and Results

After instrument construction is complete, test the effectiveness of your product. Record the information obtained from your group's weather instrument over a one-week period. Team members recording data write their initials on the record sheet.

Results

Date_____ Results_____ Initials___
Date_____ Results_____ Initials___
Date_____ Results_____ Initials___
Date_____ Results_____ Initials___
Date_____ Results_____ Initials___

Conclusion/Analysis

Based on observations and results, plus information received from local weather forecasts, rate your product (weather instrument) on a scale of 1-4. (1=poor, 2=good, 3=very good, 4=excellent) Support your information.

Conclusion/Analysis

Science Group _____
Weather Instrument _____
Rating given _____
Reasons for rating:

Weather Instrument Tour

Materials:

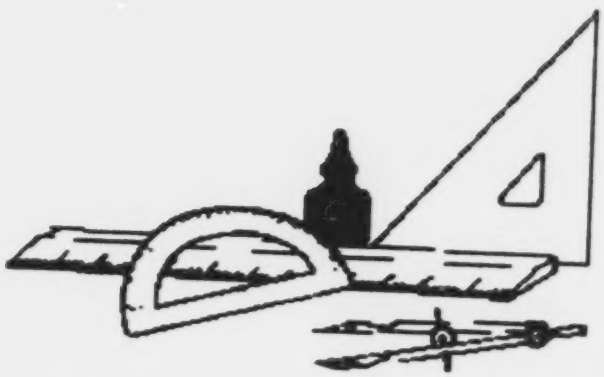
recording paper	pencil or pen
markers	construction paper
weather products	audio visual supplies

Procedure:

1. Upon completion of group weather instrument project and data collection, conduct a class tour of the various weather products. Each group may design a poster, flyer, or a 2-3 minute audio or video commercial to be placed adjacent to the weather instrument designed.

2. The groups simultaneously tour each instrument (with all pertinent information available) as a group, spending 5 minutes at each station. During this tour, the group will move in a clockwise pattern around the room to avoid congestion, ending at their own exhibit to read the comments written by fellow groups.

3. The groups will respond in writing with 2 positive comments: one comment about the construction of the weather instrument, and the other comment concerning the results and conclusion. The members of the touring group should take turns writing the comments.



Weather Instrument Tour
Comment Sheet

Weather Instrument

_____

Group Commenting: _____
Construction Comment_____
_____
Results Comment_____

Group Commenting: _____
Construction Comment_____
_____
Results Comment_____

Group Commenting: _____
Construction Comment_____
_____
Results Comment_____

Group Commenting: _____
Construction Comment_____
_____
Results Comment_____

Group Commenting: _____
Construction Comment_____
_____
Results Comment_____

Group Commenting: _____
Construction Comment_____
_____
Results Comment_____

Group Weather Rhebus

Materials:

weather books	reference books
paper	pencil
weather maps	markers

Procedure:

1. The group first needs to design a key using pictures for weather-related terms. The examples may be obtained from science textbooks, weather maps, or designed by the group members.

2. The teacher or group sets the requirements as to the length of the story and the number of different pictures to be used.

3. This activity will be accomplished using simultaneous **Round Table**. Each group member will have his/her own sheet of paper and a pen or pencil. Using a stopwatch or teacher's directions, each group member will begin a story, substituting weather-related words with the pictures or symbols the group chose earlier, allowing 4 minutes for the first round.

5. After that time period, the members finish their own sentence, then pass the story in a clockwise fashion around the group. Each new pass results in time to read the story, then allowing 4 minutes for that round. (Again, allow time for everyone to read the story before beginning the time limit.)

6. Once the story is back to the original author, allow time to read and then conclude the story.

7. The group then shares the stories and edits them, again using the Round Table Format. Checking for spelling, punctuation, capitalization and grammar errors.

8. The final draft is written in ink or typed and placed on large posterboard with the key in the corner. Reminder: colorful illustrations add a lot to the product's appeal.

9. A **Weather Rhebus Tour** of the final products may again be recommended. (See Tour directions.)

Weather Rhebus
Tour Directions

Materials:

Weather Rhebus final product
Weather Rhebus comment sheet
pen or pencil

Procedure:

1. Upon completion of group weather rhebus project, conduct a class tour of the various weather stories.

2. The groups simultaneously tour each poster with stories and key attached, spending 5 minutes at each station.

3. During this time, the group will move in a directed fashion from exhibit to exhibit ending at their own to read the comments written by fellow groups. It is best to space the work in a circular pattern around the room to avoid congestion, having the groups move in a clockwise fashion.

4. The group responds in writing with 2 positive comments: one in regards to the story content, and the other comment concerning the creativity and design.

Weather Rhebus Comment Sheet

Weather Rhebus _____

Group Commenting: _____
Story Comment _____
_____
Creativity Comment: _____
_____

Group Commenting: _____
Story Comment _____
_____
Creativity Comment: _____
_____

Group Commenting: _____
Story Comment _____
_____
Creativity Comment: _____
_____

Group Commenting: _____
Story Comment _____
_____
Creativity Comment: _____
_____

Group Commenting: _____
Story Comment _____
_____
Creativity Comment: _____
_____

Group Commenting: _____
Story Comment _____
_____
Creativity Comment: _____
_____

Group Cloud Chart

Using various reference books, study the different cloud formations. Each member studies one type, finding information about its altitude, description, weather indication to complete the chart. Upon completion of the chart, the group may choose to design a poster showing the different cloud formations at different altitudes.

Group Cloud Chart Team Name_____

Kind	Altitude	Description	Weather Indication	Illustration

Group Weather Log

Team Name _____

Meteorologists use data collected to predict the weather. In this activity you will follow the weather patterns as they occur during a school week's period (5 days). Keep the weather log and predict the weather. Each group member will be responsible for one of the measurements needed. After collecting the data, the group will come to agreement about the next day's weather prediction.

Weather Log

Days	Temperature High Low	Relative Humidity	Barometric Pressure	Air Masses	Prediction
Day 1					
Day 2					
Day 3					
Day 4					
Day 5					

Conclusions:

1. What types of weather changes occurred this week?
2. What caused these weather changes?
3. Did you receive any precipitation during the week?
4. If so, how much was recorded?

Weather Riddles

Materials:

paper	drawing paper
pencil	markers

Procedure:

1. **Brainstorming Activity**: Designate a team member to record Weather-related terms on a sheet of paper. Team members generate as many terms as possible within a 3 minute time period. During this brainstorming activity, all ideas are recorded.

2. After the time period expires, the team chooses a minimum of 5 terms to create riddles with.

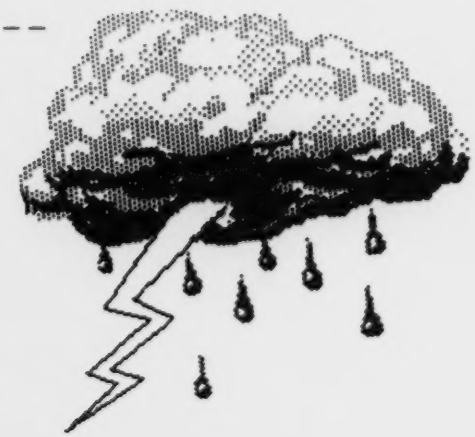
3. Each term needs 3 clues. As a team, decide if you will give the number of letters in the word. The team may also decide to decorate their riddles.

4. After the teams complete the desired riddles (minimum of five riddles), the teams may challenge other teams to accurately guess their riddles. (Points may be awarded for good clues, correct answers to challenge, and "stumped" riddles.)

Example: 1. It is made up many thunderstorms.
2. It occurs over the ocean.
3. It is very destructive.

What is it? _ _ _ _ _ _ _ _ _

Answer: hurricane



Weather Game

Instructions:

This game is designed for cooperative learning teams. Laminate the Weather Game Board and provide Vis-a-vis markers for each team. Using a set of 26 alphabet letters on cards, select 5 letters randomly. Place these letters vertically on the Weather Game Board, under the column labeled **Letters**.

Using the Round Table Cooperative Learning activity, have the groups complete the game board, adding words (under appropriate headings) beginning with the letters selected in a specified period of time. Round Table Cooperative Learning involves passing the game board and the marker to each individual team member and allowing that person to record his/her response. Other team members are not to respond until it is their turn. (The time depends on students' prior knowledge...allow approximately 3-8 minutes.)

After the specified time has elapsed, then award points in the following manner: 1 point for common answers and 5 points for answers no other group has. (The students need to be able to support their answers.) Repeat the game using new letters. (Enlarge and laminate the game board.) Below is a sample game board partially completed.

Sample Weather Game Board

Letters	Weather Tools	Weather Words	Weather Conditions	Misc.
T	Thermometer	Temperature	Tornado	Thunder
H	Hygrometer	Hydrogen (gas found in water)	Hail	Hailstones

Weather Game Board

To use with Weather Game Board directions.

Letters	Weather Tools	Weather Words	Weather Conditions	Misc.

Weather Broadcast

Discuss weather broadcasts, weather forecasts, and the role of a meteorologist, using the **Round Robin** Format. In **Round Robin,** the students orally discuss the terms, taking turns. One member may help another member if requested, otherwise they wait until it is their turn to talk. The students should watch a weather newscast on the local station or the Weather Channel. The group then designs a mock weather broadcast using the United States Map, (If possible, they may use maps of other countries) appropriate weather symbols, and a commercial for a weather instrument.

The criteria to be established: number of symbols to be used, length of broadcast, length of commercial, explanation of weather fronts, masses, jet streams, weather pressure, isobars, isotherms, and the length of time each member is speaking.

Following adequate preparation, the group will present the broadcast to the class. The other groups will provide comments on a scale of 1-4 for each criteria, 1=poor, 2=good, 3=very good, 4=excellent.

Weather Broadcast Comment Sheet

Group Performing_____
Group Responding_____

1. Appropriate use of symbols____ because_____

---

2. Length of broadcast_____ because_____

---

3. Quality and length of commercial____ because_____

---

4. Explanation of terms_____ because_____

---

5. Adequate use of each member_____ because _____

---

6. Quality of broadcast_____ because_____

Insect Unit

Each team will work to complete the following activities. Upon completion of each activity, write in the date completed.

ACTIVITY	Date Completed
1. Corners	_____
2. Team Name	_____
3. Design an Insect	_____
4. Create an Insect Trap	_____
5. Insect Observation	_____
6. Insect Scavenger Hunt	_____
7. Hocus-Focus	_____
8. Write a Rap, Song or Chant	_____
9. Insect Pass Along Story	_____
10. Insect Graphic Organizer	_____
11. Camouflage Caper	_____
12. Classify: Insect or Not?	_____
13. News Reporting	_____
14. Insect Poetry	_____
15. Guess What I Am	_____
16. Seek 'n Find	_____
17. Insect Word Splash	_____

Team Name _____

Insect Activity Evaluation

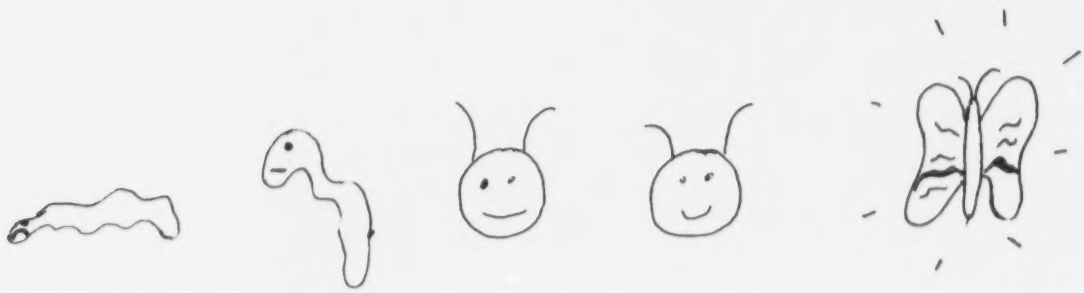
Each group completes a processing or evaluation sheet upon completion of each insect activity. Team members within each group should take turns recording the group's responses. (Individual groups may choose to design their own processing sheet.)

Group Name_____
Activity _____ Date _____

Team Members _____
_____
_____
_____

****

Rate your group from 1 to 5 on the following skills: (See chart below)



1 2 3 4 5

Working quietly ___ because _____.
Group participation ___ because _____.
Understanding concept ___ because _____.

Teacher comments:

Insect Corners

Materials:

paper	markers
pencil	insect books

Procedure:

1. As a class, brainstorm all of the different insects you know. Be careful to make sure they are truly an insect (with six legs, three different body sections, antennae, etc.) Teacher writes the insects on chart paper or chalkboard.

2. Next, as a class narrow down the choices to six or seven, depending upon class size. (Teachers should try to have groups of three or four).

3. Assign a random group of students to draw one of the insects on 12 x 18 paper, color and label accordingly. Place these drawings around the classroom.

4. Then, have each student decide upon an insect of interest and write down that insect on a sheet of paper and reasons why it was chosen.

5. After each student has written down the insect, have the class move with their papers to the appropriate insect. The teacher pairs the students off having them explain to their new partner why they chose that particular insect. (Pairs can be made from adjacent insect groups.) If an uneven number exists, you can also form a three-some.

6. Finally, group the students by pairs in groups of three or four, forming a new **Insect Team** to complete the Insect Unit. Each team is now responsible to design a Team Name.

Insect Team Name

Each new group designs a Team Name, related to insects. If teams need additional structure, offer the following suggestion:

1. Assign a recorder for the group to write down the members' responses.
2. Use a Round Robin format, where students take turns orally responding to questions.
3. Upon completion of the questions, find all of the common responses.
4. Using two or three of the common responses, think of a creative name.
5. Check with your teacher when you have developed your team name.
6. Then create a poster including team name, an illustration, and the names of the individual team members. This poster should be placed on team notebook where you will keep track of the team's Insect work.

QUESTIONS:

1. **What is your favorite color?**

2. **What is your favorite mode of transportation?**

3. **Which insect do you think is the friendliest?**

4. **Which insect do you feel is the biggest "pest?"**

5. **As an insect, where would you prefer to be--air, land or water?**

6. **What do you like best about insects?**

7. **Which insect is your favorite?**

Design an Insect

Materials:

- reference books
- drawing paper
- markers
- materials chart
- insect books
- pencil
- data sheet

Procedure:

1. Each team needs to come to a consensus as to which insect they will design, build and label, enabling a variety to be designed. (If necessary, the teacher can write names of different insects on small slips of paper and have each group draw one.) The team also needs to design a background for the habitat of the insect.

2. Using research books draw a picture of your insect. Brainstorm various ways to build a replica of your insect. Complete the Data Sheet and Materials Chart below, using a variety of supplies. After completion, the insects will be placed on display.

Data Sheet

Group Name _____

Insect chosen _____

Date began _____ Date Completed _____

Materials Chart

**Complete the chart, describing the necessary materials, where materials can be obtained, costs, and team member responsible.

Materials	Source	Cost	Team Member

Design an Insect Continued

Procedure:

1. List the steps your group will take to build the insect, design the habitat. Also list the member responsible for each step.

Design an Insect Procedure:

Create an Insect Trap

Research various methods for creating insect traps and design at least two different traps. You are to determine which trap design is the best. After the construction is complete, test the effectiveness of the various traps. Record the insects that were trapped. (Team member recording data should write his/her initials.) Keep a few of the insects for another activity.

Results

Date_____ Trap_____ Results_____ Initials_____
Date_____ Trap_____ Results_____ Initials_____
Date_____ Trap_____ Results_____ Initials_____
Date_____ Trap_____ Results_____ Initials_____

Conclusion/Analysis

Based on observation and results, rate each trap on a scale of 1-4. (1=poor, 2=good, 3=very good, 4=excellent) Support your information with reasons.

Science Group _____
Insect Trap _____ Rating _____
Reasons _____
_____

Science Group _____
Insect Trap _____ Rating _____
Reasons _____
_____

Science Group _____
Insect Trap _____ Rating _____
Reasons _____
_____

Science Group _____
Insect Trap _____ Rating _____
Reasons _____
_____

Insect Observation

Place the insects in a container to observe them, completing this observation form. (Make copies for additional insects.)

Team Name _____

Insect Observation

Insect _____
Number of legs and size _____
Approximate size _____
Wings _____
Type of mouth _____
Describe any antennae _____
_____
Describe any hair visible with magnifying glass:
_____
Describe eyes _____

Sketch of Insect (label parts):

Insect Scavenger Hunt

Procedure:

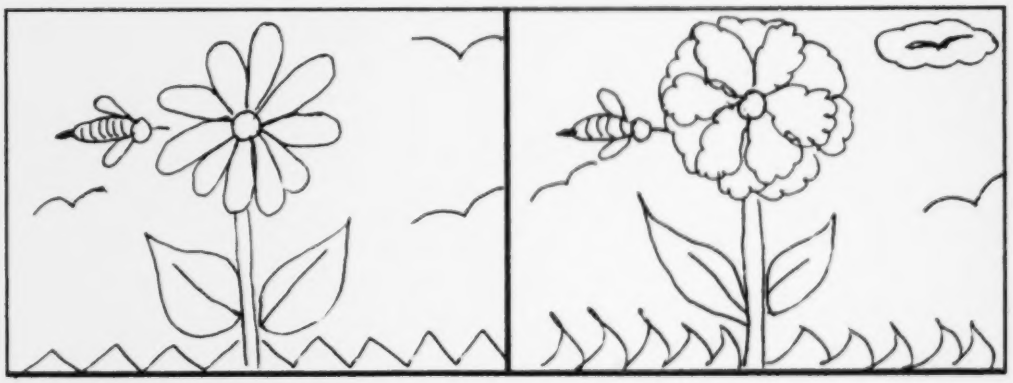
1. As a team, observe your surroundings, and record the insects you found and the exact locations of these insects. Remember to look under sticks, logs, around ponds or standing water, on trees, etc. (You may wish to take magnifying glasses with you.)

Team Name _____

Insects **Location (be specific)**

Hocus-Focus

Look carefully at the two pictures below, and find the six differences. Time yourselves to see how long it takes.



Next, create your own hocus-focus. Brainstorm what your picture will be and assign the following jobs:

#1 makes the cover, including a border, title, directions, team name, and individual names

#2 begins first illustration

#3 works on second illustration, making six or more differences

#4 using colored pencils, crayons, markers or paints will color in both drawings

Write a Rap, Song or Chant

Materials:

pencil	music song books (optional)
insect books	reference books

Procedure:

1. Brainstorm various functions of a particular insect, such as where it lives, what it eats, how it moves, its body parts, etc.

2. Then listen to rap music (your teacher will have to approve it first), to get an idea of the beat or rhythm.

3. Write your new song, rap or chant. Your lyrics or words could also go to older song tunes, like "Are You Sleeping," "Johnny Comes Marching Home," or the "Farmer in the Dell."

Insect Pass-along Story

What If Insects Ruled Humans?

Materials:

ruled paper	pencil
drawing paper	markers
insect books	reference books

Procedure:

1. Each group writes a short story about how life would be different if their researched insect ruled humans. Each story needs a cover page, several illustrations, text, and back page.

2. The students in each group begin by numbering off and working on the corresponding numbered job:

   #1 starts the cover page, which includes the title, team name, individual names, and small illustration
   #2 starts an illustration page, including insect picture, possibly ten times the size of humans and a border
   #3 starts the story, "Once upon a time...," "Guess what happened on my way home?"
   #4 starts the back page, including questions or a brief summary with a picture

3. After approximately 8 to 10 minutes the students pass that job around in a clockwise rotation. This process continues until each person has worked on each facet of the story, returning the work to its origin.

4. Then each person continues the original numbered job, edits the work, and completes a final draft for publication.

5. The group may bind their book with yarn, plastic rings, etc. Be creative! (The team could even use clay, twigs, etc. for the insect picture on the cover.)

Insect Graphic Organizer

Materials:

paper	pencil
insect books	reference books
markers	

Procedure:

1. As a group, design a graphic organizer to show similarities and differences between **Insects** and **Spiders**. (Students may use a Venn diagram or create their own.)

2. The possible roles needed include: **Recorder** to write responses, **Reporter** to explain to the whole class, **Time Keeper** to watch the time and keep the group on task, **Encourager** to encourage all members to participate, or a **Checker** to verify if all members agree.

Insect Graphic Organizer

Designed by _____

Camouflage Caper

To survive many insects have built-in camouflage to hide from their predators.

Materials:

reference books	pencil
drawing paper	markers
scissors	
moth picture to make a pattern	

Procedure:

1. In this activity your team will try to decorate four moths to hide within your classroom.

2. Brainstorm the various hiding places and the colors necessary for blending the moth into the background.

3. Each team member draws a moth approximately six inches in width. (Use an overhead projector to enlarge a drawing if necessary.)

4. Finally decorate the four moths (write team name lightly in pencil on the back).

5. Place the moths around the classroom. Keep track of where each group's set of moths are placed.

6. Invite someone from the administrative staff to come in and locate the various moths within a given amount of time (5 minutes).

7. The moths the staff could not find were adequately camouflaged and earn the Insect Award for Excellent Camouflaging!

Classify It: Insect or Not

The purpose of this activity is to determine whether the bugs are insects or other arthropods.

Materials:

paper	pencil
magazines	scissors
glue	pictures of bugs
construction paper	reference books

Procedure:

1. Teams collect magazine, newspaper, and coloring book pictures of all types of bugs.

2. Cut out the pictures, label and paste on small pieces of construction paper, to later attach to a poster. (Possible bugs include: fly, spider, grasshopper, tick, butterfly, cricket, millipede, crab, scorpion, moth, ladybug, crayfish, silverfish, centipede, honeybee.)

3. Each team will design a large poster/bulletin board classifying whether the bugs are insects or not. A written explanation should accompany the labeled pictures.

4. The teams need to describe the characteristics necessary for an insect: 3 main body parts (head, thorax, abdomen), usually have 6 legs, eat a variety of things, found in water and on land, have antennae, usually have two pairs of wings, and usually have 2 compound eyes.

News Reporting

Materials:

- pencil
- computers/typewriter
- word processing program
- black pens for illustrations
- paper
- sample newspapers

Procedure:

1. As a group, the team needs to decide the scope of their newspaper. Will it involve all insects or be confined to one type, such as the Grasshopper Gazette, the Ants Antics, the Crickets Chronicle or the Independent Insect?

2. The group decides on the role of its members: Editorial, Sports, Weather, News, Comics, Art Work and Advertisement. A possible word processing program to use would be Children's Writing and Publishing.

3. The team distributes the workload among its members, sets a deadline, researches and writes the articles, and meets for an editing meeting.

4. At the editing meeting each member checks the other member's articles, initialing upon completion.

5. The team then types final drafts using the word processing program for a newspaper.

6. Remember by-lines, art work, headlines, and reporting styles.

Insect Poetry

Haiku is a Japanese form of poetry usually dealing with nature topics. How appropriate for insects!

Materials:

sample Haiku poems	drawing paper
paper	markers
pencil	

Procedure:

1. Review the format for Haiku poetry:
   * Three lines with a total of 17 syllables
   * The first line has 5 syllables
   * The second line has 7 syllables
   * The third line has 5 syllable

2. The team decides on what insect to write about.

3. The team divides up the work as follows:
   #1 Writes the first line--about appearance
   #2 Writes the second line--about movement
   #3 Writes the third line--about appearance
   #4 Draws a large silhouette of the insect

4. Finally, the team edits the rough draft and a final copy is made (typed or handwritten).

5. The silhouette is then traced on a large sheet of construction or posterboard.

6. The final draft is then pasted on the insect silhouette for display with team name and individual names included.

Guess What I Am

Materials:

reference books	pencil
paper	notecards

Procedure:

1. Each team creates four different riddles about insects.

   Example: I am a worker.
   I fly around.
   I have poison.
   What am I? **(Answer: Honeybee)**

2. First the team selects four different insects.

3. Then the team writes down 3 clues for each insect.

4. Edit for spelling, grammar, etc.

5. Write the final draft on 3 x 5 notecards, including team name, answer on the back and the question: What am I?

Insect Seek 'n Find Puzzle

Materials:

Insect Silhouette	Posterboard
Research Books	Graph paper

Procedure:

1. Using the silhouette shape from the **Insect Poetry** activity, trace the shape on a piece of posterboard.

2. Using research books or information, find 10 to 15 words associated with that insect.

3. Use graph paper. It is an excellent practice tool for writing in the words. The words can be written horizontally, vertically, or diagonally.

4. After you have written in all the words, then add letters to create your Seek 'n Find.

5. Paste the puzzle on the insect silhouette. Make sure your team name appears on the puzzle.

6. Ask the teacher to duplicate the puzzles for the other groups.

Insect Word Splash

This technique utilizes vocabulary terms and concepts covering a unit on insects. The terms are "splashed" at various angles on a chart, worksheet or transparency. Teachers and/or cooperative groups can design their own Word Splash as a review or prereading assignment.

Cooperative Learning Activity:

1. Each group of students predict how the terms are related to the topic or title, by writing phrases adjacent to the term.

2. After a given amount of time (approximately 10-15 minutes), the student recorder in each group draws a rectangular box around the terms not completed.

3. The group reads together the article, film or recording on insects.

4. Checking the group's prediction: If the prediction was correct, the group places * by the phrase. If the prediction was wrong, the group draws a single line through the incorrect phrase and writes the correct response next to the word.

5. When finished, the group reviews quickly the accurate information, so everyone in the group knows the correct response.

6. Teacher reviews the concepts using **Chalk Talk.** This is an activity where each group member is given a desk chalkboard to write the responses on after a question is posed to the groups. If individual group chalkboards are not available, divide the class chalkboard into sections so each group has an assigned place to write responses.

7. Possible cooperative roles for this activity: Recorder, Reader, Reporter, Checker, Time Keeper.

Insects

Insects belong to a large group or phylum of animals called arthropods. Other types of arthropods include crayfish, spiders, millipedes, centipedes, ticks, and mites. The word arthropod means "jointed leg."

Entomologists are scientists who study insects. Some common insects include ants, grasshoppers, butterflies, caterpillars, mosquitoes, flies, ladybug beetles, dragonflies, and honeybees.

Insects have many characteristics. Most are rather small in size, ranging from 1/100th of an inch (.025 cm) to over 13 inches (32.5 cm). The outer covering of an insect is called the exoskeleton, and helps protect their internal organs and prevents drying out. The exoskeleton is made of many layers, with the outer waxy layer acting as a raincoat.

All insects have three main body parts: the head, the thorax, and the abdomen. The eyes, antennae and the mouth make up the head; the wings and legs make up the thorax, and the end of the insect is the abdomen. Most insects have six legs, with only a few having none at all. Their legs are adapted to their environment. An aquatic insect uses its legs as oars for swimming, while many use theirs for transportation (jumping), grasping prey or digging to make underground tunnels. Insects are the only invertebrates (animals without backbones) that can fly, but only adult insects have wings. Some insects, like silverfish, ants and bristletails do not have wings, but most have two pairs. Flies; however, have only one pair of wings. The antennae, located on the insect's head, are used to feel, smell and in some insects, hear. The antennae vary in size, shape and how they are used.

What is a caterpillar like? It hatched out of an egg and lived on leaves while eating. The caterpillar breathes through holes along its side called spiracles. As it grows, it becomes too big for its skin, shedding it. Bright colors and tentacles help protect this creature from birds. When it is time to spin a cocoon or form a chrysalis, some caterpillars attach themselves to a twig and others burrow into the ground. Cold weather triggers a chemical reaction causing the insects to change into adults. The adult butterfly or moth will emerge when the temperature gets warmer, spring, summer or early fall.

Butterflies move from flower to flower collecting nectar. The butterfly's antennae help them find flowers. When the butterfly feeds on a flower, it uncurls a long tube and uses it to suck up the flower's nectar. Believe it or not, the butterflies taste with their feet. When a butterfly rests, it folds its wings above its back. These brightly colored wings sometimes attract birds.

Ladybugs are a kind of beetle that live in forests, fields, and gardens. Ladybugs are brightly colored to scare off birds and animals because they taste awful. Not all ladybugs have spots. The hard back of a ladybug is really a pair of wings, shielding the insect from predators. Farmers like ladybugs because they eat aphids or small insects that feed on plants.

The cricket is another insect familiar to farmers; however, the cricket eats plants. Most crickets are green, which helps them hide in grassy areas. They use their long back legs to flee from danger.

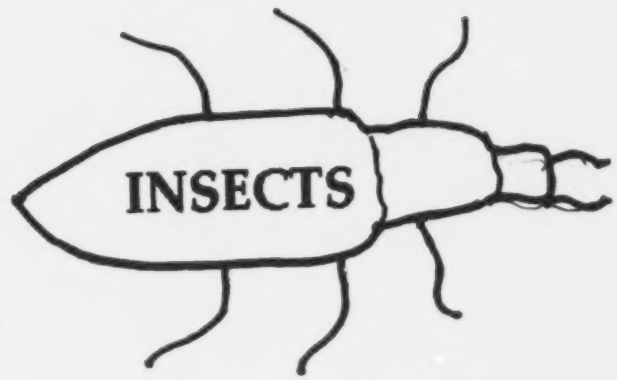
abdomen

invertebrates

arthropods

ladybug's wings

1/100th of an inch



nectar

thorax

cocoon

antennae

head

13 inches

Entomologist

aphids

exoskeleton

Plant Unit

Each team will work to complete the following activities. Upon completion of each activity, write in the date completed.

	ACTIVITY	Date Completed
1.	Team Formation	_____
2.	Plants in a Carton	_____
3.	Plant Riddle Rhymes	_____
4.	Plant Chain Filmstrip	_____
5.	Plant Cycle	_____
6.	Parts of a Plant	_____
7.	Xylem Travel	_____
8.	Tropisms	_____
9.	Plan a Trip	_____
10.	Giving Tree Production	_____
11.	Capture a Plant	_____
12.	Plant ABC Book	_____
13.	Leaf Haiku	_____
14.	Seed Poster	_____

Plant Activity Evaluation

Each group completes a processing or evaluation sheet upon completion of a plant activity. Team members within each group should take turns recording the group's responses. (Individual groups may choose to design their own processing sheet.)

Group Name_____
Activity _____ Date _____

Team Members _____
_____
_____
_____

****

Rate your group from 1 to 5 on the following skills: (See chart below)

1 2 3 4 5

Working quietly ___ because _____.
Group participation ___ because _____.
Understanding concept ___ because _____.

Teacher comments:

Team Formation

Materials:

pictures of plants	markers
pencil	folders
paper	

Procedure:

1. The students will form new groups by using **Corners**. The teacher decides the plant types the students will respond to, and places the topics/illustrations around the room. (Example: Roses, Daisies, Weeping Willow Tree, Tulips, Evergreen Tree, Lilac Bush, or Carrot plant.

2. The student writes his/her choice on a sheet of paper with a reason why they like that plant.

3. The students proceed to the "corner" or space where that plant is placed.

4. Within the corners, the students discuss why they chose that particular plant, listening to others.

5. The teacher pairs the students off into groups of three or four to begin their plant unit. Once in groups the teams decide on a name linked with their plant choices. (Some teams may have members from more than one group depending upon student choices. In that case, both names need to be included.)

6. Once a team name has been decided and approved by the teacher, the group needs to design a cover for their folder. This folder will store in the group's work. It must include team name, individual names, and an illustration. All members must participate in making the cover.

Plants in a Carton

Materials:

quart milk carton	markers
potting soil	scissors
grass seed or seeds of choice	ruler
white construction paper	unruled paper
glue	pencil

As a team, choose from the different **Roles** to complete the project:

Materials Manager collects all the materials for the project and asks for assistance when the group needs help.

Recorder writes the group's responses during the activity.

Artist draws the necessary art objects for the group.

Task Master keeps the group on task to complete the activity.

Procedure:

1. Cut the top off of the milk carton and leaving about 5 inches from the base.

2. Cover the milk carton using white construction, scissors, and glue.

3. Decorate the milk carton as group desires.

4. Add potting soil to approximately 1/2 inch from the top of the carton.

5. Place seeds in soil according to directions on the package.

6. Create a Plant Certificate similar to a Birth Certificate, including name of plant, team name, individual names, date of planting, possible date of first growth, expected height, etc.

7. Place plant in location to receive light and post plant certificate to record actual information as observed.

Plant Riddle Rhymes

In this activity the teams create as many two word rhymes as possible/and turn them into riddles.

Materials:

paper	dictionary
pencil	drawing paper
thesaurus	colored pencils

Procedure:

1. Each student takes a piece of paper and writes a word associated with plants at the top of the paper and draws a box around that word.

2. Using Simultaneous Round Table, the students pass their sheets of paper around the table for each member to record his/her rhyming words for the word at the top of the paper.

3. Continue Round Table activity until each student has four to six rhyming words for their selected word.

4. Each student now chooses a rhyming word and writes a riddle for its word.

5. Next each student takes a sheet of drawing paper and folds it in half, similar to a greeting card. On the front half, the student writes the riddle. On the inside of the paper, the student writes the answer with an illustration. The team displays their work around the classroom.

Examples:

What is a nectar collector?	(Answer: a bee)
What is a Bread Spread?	(Answer: butter)
What is an immobile large vehicle?	(Answer: a stuck truck)
What is a muscular plant?	(Answer: a power flower)

Plant Chain Filmstrip

Materials: reference books
markers
2 small dowel rods
scissors
roll of paper 8 1/2" x 50"
of paper
plant books
tape
contact paper
box about 12" x 20"
or tape together several sheets

This activity will show the importance of plants in our food chain. We all need the sun to survive. The sun is essential in the photosynthesis process in plants. Plants are eaten by humans and animals. Eventually plants and animals decompose, completing the food chain. The team also includes their favorite foods, explaining the source, whether this food comes directly from plants or not. Some foods, such as ice cream, come from cows who eat grass.

The team brainstorms the process using plant and other reference books. After agreeing on the steps and favorite foods to include the team divides into two groups: the filmstrip group and the projector group.

The filmstrip group maps out the steps and designs the layout on scratch paper before drawing on the paper roll. Each step needs to be outlined in a 8" x 10" frame, cartoon style. After designing and penciling in on the paper roll, the members decorate the filmstrip with markers.

The projector group cuts a hole 8" x 10" in the box for the filmstrip similar to a TV screen. The large hole should be in the center of the box with smaller holes at the two sides of the opening for the dowels to hold the filmstrip. The group then covers the box with decorative contact paper, leaving the holes open.

After both groups are finished, the filmstrip group tapes the beginning of the filmstrip onto the left dowel (opening in front) and the end of the filmstrip to the right dowel, rolling the filmstrip onto the right dowel.

To view the filmstrip, have one team member to roll the filmstrip from the left side, while another member narrates the presentation.

Plant Cycle

In this activity the team illustrates and explains the oxygen-carbon dioxide cycle of plants, animals, and humans.

Materials:

- plant books
- reference books
- posterboard
- pencil
- glitter, etc.
- ruler
- markers
- scissors
- glue

Procedure:

1: The team chooses roles: Materials Manager, Task Master, Recorder, and Artist. The Materials Manager collects all the materials for the project and asks for assistance when the group needs help. The Recorder writes the group's responses during the activity. The Artist draws the necessary art designs for the group. The Task Master keeps the group on task to complete the activity.

2: The team researches the topic finding as much information as possible.

3: The team discusses how to arrange the illustrations and explanations using the Round Robin format. The students orally respond, in turn, to possible solutions for the task. Team members may only assist a fellow member if help is requested.

4: The team decides how to arrange the illustrations and explanations on the posterboard.

5: The artist draws the illustrations in pencil and all members take part in penciling in the explanations.

6: The team colors in the illustrations and explanations with markers.

7: The artist finishes the poster using glitter or other objects to decorate it.

8: The recorder makes sure the following are on the poster: Title, Team Name, and Individual Names.

Parts of a Plant

Materials:

flower books	reference books
posterboard	construction paper
scissors	glue
markers	labels

Procedure:

1. The work is divided equally among the team members with each member making part of the plant using colored construction paper: roots, stem, leaves, and flowers. (One possible way to divide the work is to place the names of the parts on a piece of paper and have each member draw one piece out of a hat.)

2. The team must choose a flowering plant from one of the resource books. Each member draws a section of the plant.

3. After each member has made the section of the plant then attach it to the posterboard. Label each part of the plant using markers and labels. Under the label, each member, writes the purpose of that plant part on the poster.

Parts of a Plant....Part Two

Upon completion of Parts of a Plant, the different teams will be involved in a Formations activity involving student mobility.

4. Each team will think of a type of lawn/gardening machine and plan how to act it out. During the actual demonstration, no talking is allowed, but the students are to make some kind of motor noise. Also, each person must be touching another. The teams could design a new invention or use a current or antiquated gardening equipment.

Xylem Travel

In this activity, the team observes water moving through the celery plant. The team will discover what part of the plant the xylem is located in and its purpose.

Materials:

clear plastic container	reference books
water	plant books
food coloring	masking tape
celery stalk with leaves	paper
knife	pen, pencil, markers

Decide on the roles of the team: Materials Manager, Recorder, Task Master, Checker, and Designer. The Materials Manager collects all the materials for the project and asks for assistance when the group needs help. The Recorder writes the group's responses during the activity. The Designer decides the necessary art designs for the group's project. The Task Master keeps the group on task to complete the activity. The Checker verifies the information in the textbook and that all members in the group agree on the project's details.

Procedure:

1. Fill the clear plastic container with one cup of water.

2. Add five or six drops of red or blue food coloring and stir carefully.

3. Next cut off the bottom of a celery stalk and place the stalk in the colored water.

4. Design a data sheet to record what happens to the celery during the next 2 days. This data sheet should include the team name, the activity, the individual names and role responsibilities, the dates, etc.

5. After 2 days, cut across the stalk and record information on your data sheet. Explain what happened to the plant.

6. The team designs a diary explaining the travel trip of a drop of water through the plant's system. Make a creative, imaginative cover to display your team's diary. Keep in team folder.

Tropisms

Tropisms are plant responses to outside factors that involve plant growth. Geotropism is a plant response to gravity, seeing what happens to a plant if you turn it sideways while growing. Phototropism is the plant response to light, plants will grow towards light.

Materials:
- potting soil
- 4 clear plastic cups
- record sheet
- bean seeds (tend to grow faster)
- shoe box
- masking tape
- pencil

Procedure:

1. Label cups as follows: (Each team member labels one cup)
   - Plant A - in light
   - Plant B - in box with hole in far end pointed towards light
   - Plant C - sideways to right
   - Plant D - sideways to left
2. Add topsoil to each cup.
3. Place 5 seeds in soil along the cup's edge, about 1 inch below surface.
4. Place cups as indicated in Step 1.
5. Design a Record Sheet and keep track of data on a daily basis. Use the format below:

Date	Plant A	Plant B	Plant C	Plant D	Comments

Conclusion: What did your group find out about the growth of plants and their root system? Write up a short summary about what you discovered on the bottom of your Record Sheet. Include the terms: tropism, phototropism and geotropism.

Plan a Trip

The team plans a field trip for the class to a gardening store, farm, or plant nursery to learn about growing plants. If field trips are not possible the team should plan an assembly with guest speaker from a nursery or gardening store.

Materials:

telephone book	pen
stationary	pencil
sample business letter	

Procedure:

1. The team brainstorms places for taking a field trip on plants.

2. Write a business letter to the location requesting information on a possible field trip. (Review the parts of a business letter.) Secure possible dates with your teacher unless your group would be taking the trip after school or on weekends. If you are planning for a guest speaker, write the business letter to request information on the assembly and the speaker's preferred dates.

3. Brainstorm questions to ask.

4. Discuss with your teacher the costs involved in planning the field trip or assembly.

5. Design a brochure to advertise the field trip or assembly.

6. Plan a short presentation to the class on the field trip/assembly.

Giving Tree Production

Materials:

Giving Tree book by Silverstein
paper
pencil
colored markers

As a team, choose from the different **Roles** to complete the project:

The **Reader** reads the story to the group.
The **Recorder** writes the group's responses.
The **Task Master** keeps the group on task.
The **Artist** adds imaginative illustrations to the group's project.

Procedure:

1. The group listens to the story, The Giving Tree by Shel Silverstein.

2. The group brainstorms possible ways to retell the story: play form, choral reading, radio drama, puppetry, or making their own book.

3. The group decides how to retell the story, making a list of necessary supplies for the group to make or find in the allotted time.

4. The group makes a timeline, working on script, props, supply list, etc.

5. The group practices/designs the project. If a play or oral presentation is given, the group also designs a program for the audience.

6. The Reader explains the project to the class prior to the group's presentation.

Capture a Plant

This activity develops team companionship and written communication skills.

Materials:

paper
pencil
watermelon for each group
outdoor area with hiding places
cafeteria
vaseline

Procedure:

1. Each team places identifying marks and then greases its watermelon with vaseline.

2. The team secretly decides where to hide its watermelon for another team to find.

3. The team writes directions on how to find its watermelon using compass directions and school landmarks, etc. labeling its watermelon's markings.

4. The teacher collects the directions and the class sends out a designated member to position its watermelon in the team's hiding place. (Send one at a time, so no one gains an advantage.)

5. Each team is given a set of directions and the teams follow the directions searching for its watermelon.

6. The team members find the missing watermelon and bring it back to the teacher while all members are touching the greased watermelon in the time allotted. The teams all assemble in a large area, such as a cafeteria. (If any watermelon has not been found, send the team member responsible to find the watermelon.)

7. The teams simultaneously discuss the activity and the accuracy of the written directions. One member responds with a positive comment.

Plant ABC Book

In this activity the group designs a plant alphabet book. The team could purchase a small blank book (approximately $3 or less in cost) or make their own book.

Materials:

plant books	markers
reference books	blank book

Procedure:

1. The team brainstorms various plants to be used in their alphabet book, planning a trip to school or public library.

2. The team divides the alphabet equally among the team members, especially the difficult letters. (The difficult letters include: j, k, q, u, v, w, x, y, z.)

   Possible Divisions:

   Three person team:

   #1= a, d, g, j, n, p, s, v, y; #2= b, e, h, k, o, r, u, x; and #3= c, f, i, l, m, q, t, w, z

   Four person team:

   #1= a, e, i, r, v, z; #2= b, f, j, q, o, s; #3= c, g, k, m, p, t, x; and #4= d, h, l, n, u, w, y

3. Search for words to match your team's topic. Ask team members for help, then teacher or librarian.

4. Each page needs the following:
   a. Word for the given letter
   b. Colorful illustrations or magazine pictures
   c. Three complete sentences including: who, what, where, when, why about the plant
   d. Check for spelling and/or grammar errors
   f. Final copy in ink or typed

5. The team designs the cover page and title page, including title, team name, and individual authors.

Leaf Haiku

The team writes a haiku poem about plants, leaves, or trees. A haiku is a Japanese poem containing three lines. The first line has five syllables, the second has seven syllables, and the third line has five syllables.

Materials:

markers	pencil
leaves	dictionary
thesaurus	paper towels
waxed paper	clear contact paper
construction paper	9 x 12 posterboard (any color)

Processing:

1. Choose a person to volunteer to record team's ideas.

2. Select the topic of your poem.

3. Brainstorm ideas about the topic, including size, shape, color, texture, growing patterns, etc.

4. Select phrases from brainstorming activity to write in haiku form (checking syllables for each line).

5. Double check your syllable count in each line, and have recorder rewrite or type and place on construction paper circle (4" in diameter).

6. Find leaves of different size and color, approximately 12 to 15 leaves. Allow leaves to dry on paper towels, and remain flat between waxed paper and pile a set of books on top.

7. Place flattened leaves on the posterboard in a circular pattern with stems pointing inward. Leave enough space for the poem on construction paper to be placed on top of the leaves in the center.

8. Cover the leaves and poem with clear contact paper.

9. Cut around the outside edges following the leaf pattern. Be sure to leave 1/2 inch space so the contact paper does not pull apart from the posterboard. Display poems for all teams to enjoy

Seed Poster

The team researches the different methods plants have in adapting their seedlings for survival. Some seedlings are winged and float through the air, while others have stickers to cling to animals' fur before dropping off onto the ground.

Materials:

- posterboard
- markers
- glue or tape
- plant books
- reference books

Procedure:

1. The team members collect different types of seedlings for a group poster. Record in team folder the different seedlings each member brought in.

2. The team organizes the seedlings by categories learned from research. The team records the different categories in their team folder.

3. The team designs a poster including: Title, Team Name, Individual Names, and Type of Seedlings. The team also records in the team folder the different jobs each member has in preparing the team poster.

4. The team attaches the seedlings to the poster and labels them.

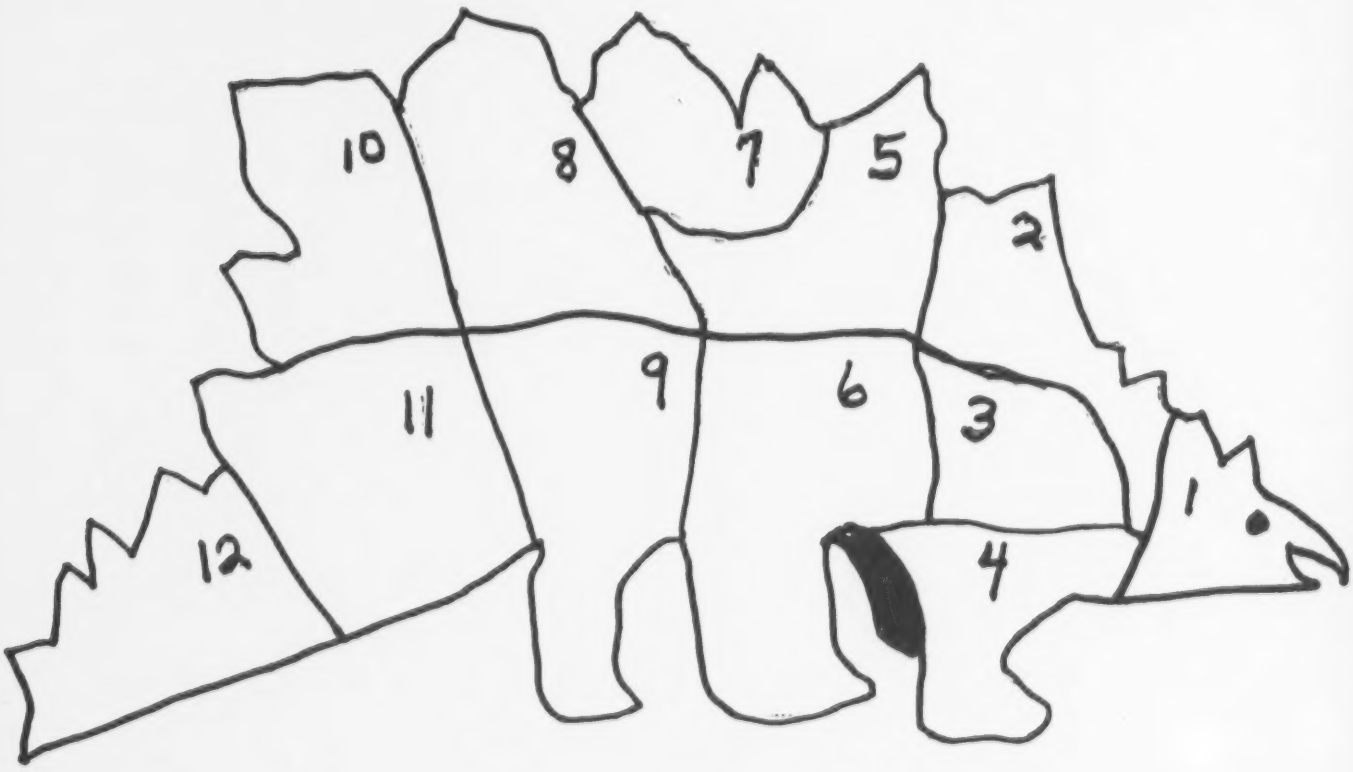
5. The team writes a brief description for each seedling on how it adapts itself for survival. For example the maple seedling is winged so it can float through the air.

6. The team presents its poster to the class before displaying.

Dinosaur Unit

As your group completes an activity, write in the date completed and fill in the appropriate section on the dinosaur.

ACTIVITY	Date Completed
1. Dinosaur Cut Ups	_____
2. Dinosaur Line-Up	_____
3. Design a Team Name	_____
4. Dinosaur Word Splash	_____
5. Dino.Did You Know?	_____
6. Dino Double Trouble Tongue Twisters	_____
7. What If Our Dinosaur Came Back to Life?	_____
8. Dinosaur Archaeological Dig	_____
9. Archaeological Dig Diary	_____
10. Travel Brochures to the Land of the Dinosaurs	_____
11. Dinosaur Graphic Organizer	_____
12. Dinosaur Shape Book	_____



Dinosaur Activity Evaluation

Each group completes a processing or evaluation sheet upon completion of each dinosaur activity. Team members within each group should take turns recording the group's responses. (Individual groups may choose to design their own processing sheet.)

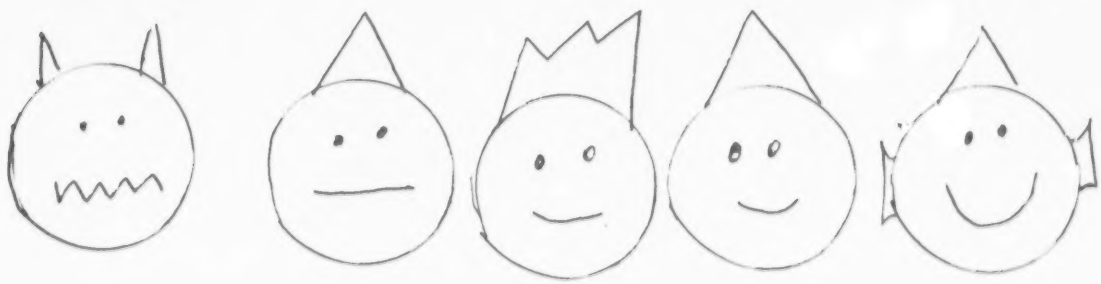
Team Name _____

Activity _____ Date _____

Team Members:

****

Rate your group from 1 to 5 on the following skills: (See chart below)



1 2 3 4 5

Working quietly ___ because _____.

Group participation ___ because _____.

Understanding concept___ because _____.

Teacher comments:

Dinosaur Cut Ups

This activity is designed to form new research groups.

Materials:

posterboard 9 x 12	reference books	markers
crayons	dinosaur replicas	scissors

Procedure:

1. Teacher randomly forms groups by:
   a. passing out cards with similar dinosaur names; all like dinosaurs form groups
   b. using a deck of presorted cards; all similar numbers form groups
   c. using color-coded cards or shapes; all similar color cards/shapesform groups

2. Teacher assigns a dinosaur type to each group; or each group "draws" from a hat a dinosaur to research

3. Each group illustrates the chosen dinosaur on posterboard. Next, the group cuts up the dinosaur into pieces corresponding to the number of group members.

4. Teacher collects all dinosaur cut up pieces from all groups, shuffles the pieces, and then redistributes to students. (Students are to keep their pieces **secret** for now.)

5. At signal, the students, **without talking,** search the room for new group members with corresponding dinosaur pieces.

6. Once a group has been formed by piecing corresponding dinosaurs together, the group finds a location (table, group of desks), to begin working on dinosaur unit.

Dinosaur Line-Up

Materials:

- Reference Books
- Crayons
- Dinosaur names on cards
- Graphing paper
- Markers
- Drawing paper

Procedure:

1. Using dinosaur reference materials, each student is given a dinosaur to draw and color to a predetermined scale. Example, 1 centimeter = 1 foot. Graphing paper is advised.

2. After completion of the drawings, the students are directed to line up according to size, smallest to largest. Students are not allowed to talk during this line up activity, but may use hand signals.

3. Following the line up, add drawings to a class mural to demonstrate the vast size difference among the dinosaurs.

4. Students within groups take turns adding background features to the dinosaur mural.

Possible dinosaurs:

Allosaurus
Ankylosaurus
Apatosaurus
Brachiosaurus
Brontosaurus
Chasmosaurus
Compsognathus
Corythosaurus
Diplodocus
Dromiceiomimus
Edmontosaurus
Euskelosaurus
Hadrosaurs
Heterodontosaurus
Hypsilophodonts
Ichthyosaurus
Iguanodon
Kronosaurus
Megalosaurus
Nodosaurus
Oviraptor
Parasaurolophus
Protoceratops
Pterodactyls
Spinosaurus
Stegosaurus
Titanosaurs
Triceratops
Tyrannosaurus
Ultrasaurus

Dinosaurs with approximate lengths:

For Teacher use:

Allosaurus----36 feet long
Ankylosaurus----17 feet long
Apatosaurus----70 feet long
Brachiosaurus----75 feet long
Brontosaurus----75 feet long
Chasmosaurus----17 feet long
Compsognathus----2 feet long
Corythosaurus----30 feet long
Diplodocus----88 feet long
Dromiceiomimus----11 feet long
Edmontosaurus----43 feet long
Euskelosaurus----40 feet long
Hadrosaurs----30 feet long
Heterodontosaurus----4 feet long
Hypsilophodonts-----20 feet long
Ichthyosaurus---33 feet long
Iguanodon----39 feet long
Kronosaurus----40 feet long
Megalosaurus----30 feet long
Nodosaurus----18 feet long
Oviraptor----6 feet long
Parasaurolophus----33 feet long
Protoceratops----7 feet long
Pterodactyls----wing span 50 feet long
Spinosaurus----40 feet long
Stegosaurus----30 feet long
Titanosaurs----60 to 65 feet long
Triceratops----30 feet long
Tyrannosaurus----43 feet long
Ultrasaurus----85 feet long

Design a Team Name

After forming your new groups using the Dinosaur Cut Ups activity, you need to develop a team name and a poster or scrapbook for your team.

Procedure:

1. Using the chart below and the **Round Table** format, where students take turns filling in their respective corner areas, answering the questions.

2. Upon completing the questions, find the common responses.

3. Think of a creative name for your group using at least 2 or 3 common responses. Check with your teacher when you have developed your team name.

1. What is your favorite mode of transportation?
2. Are you a carnivore (meat-eater) or a vegetarian (plant-eater)?
3 What is your favorite dinosaur period, Triassic, Jurassic, or Cretaceous?
4. What is your favorite dinosaur-related story?
5. Do you prefer land, sea or air creatures?
6. Do you prefer large or small creatures?
7. Which was your favorite dinosaur?
8. What was your favorite movie?

1 response	2 responses
3 responses	4 responses

Then create the poster or scrapbook cover, including team name, an illustration, and the names of individual team members. Each member must participate in the poster/cover creation

Dinosaur Word Splash

This technique utilizes vocabulary terms and concepts covering a unit on dinosaurs. The terms are "splashed" at various angles on a chart, worksheet or transparency. Teachers and/or cooperative groups can design their own Word Splash as a review or prereading assignment.

Cooperative Learning Activity:

1. Each group of students predict how the terms are related to the topic or title, by writing phrases adjacent to the term.

2. After a given amount of time (approximately 10-15 minutes), the student recorder in each group draws a rectangular box around the terms not completed.

3. The group reads together the article, film or recording on dinosaurs.

4. Checking the group's prediction: If the prediction was correct, the group places * by the phrase. If the prediction was wrong, the group draws a single line through the incorrect phrase and writes the correct response next to the word.

5. When finished, the group reviews quickly the accurate information, so everyone in the group knows the correct response.

6. Teacher reviews the concepts using **Chalk Talk.** This is an activity where each group member is given a desk chalkboard to write the responses on after a question is posed to the groups. If individual group chalkboards are not available, divide the class chalkboard into sections so each group has an assigned place to write responses.

7. Possible cooperative roles for this activity: Recorder, Reader, Reporter, Checker, Time Keeper.

Dinosaurs

Scientists divided the history of the earth into different ages. The three most recent eras are the Paleozoic, the Mesozoic, and the Cenozoic eras. Dinosaurs lived during the Mesozoic Era. This era began over 245 million years ago and lasted for almost 180 million years. The Mesozoic period is also known as the "Age of Dinosaurs," and is divided into three periods: the Triassic, the Jurassic, and the Cretaceous. Dinosaurs disappeared by the end of the Cretaceous period.

Many scientists believed that the earth was one big continent, later breaking up and forming the other continents. Scientists who study fossils of ancient plants and animals are called Paleontologists. In 1674, the first dinosaur bone was discovered in southern England, but it wasn't until 1841 that the term dinosaur was given to these creatures, by Dr. Richard Owen. Since 1841, over 300 different kinds of dinosaurs have been discovered.

The word dinosaur comes from the Greek terms: "dino," meaning big; and "saur," meaning lizard. The dinosaur resembles a reptile in several ways. The dinosaurs lay eggs like reptiles do. The skulls of dinosaurs are similar to skulls of reptiles. Some were also thought to be cold-blooded as reptiles are.

Dinosaurs were classified in various ways, such as eating habits and hip structures. Dinosaurs were either plant eaters or meat eaters. Dinosaurs were either lizard-hipped, with hips shaped like lizards; or bird-hipped, with hips shaped like birds. The Tyrannosaurus was a lizard-hipped dinosaur; while a Stegosaurus was a bird-hipped dinosaur. Most bird-hipped dinosaurs were also plant eaters; while lizard-hipped dinosaurs were plant eaters and meat eaters.

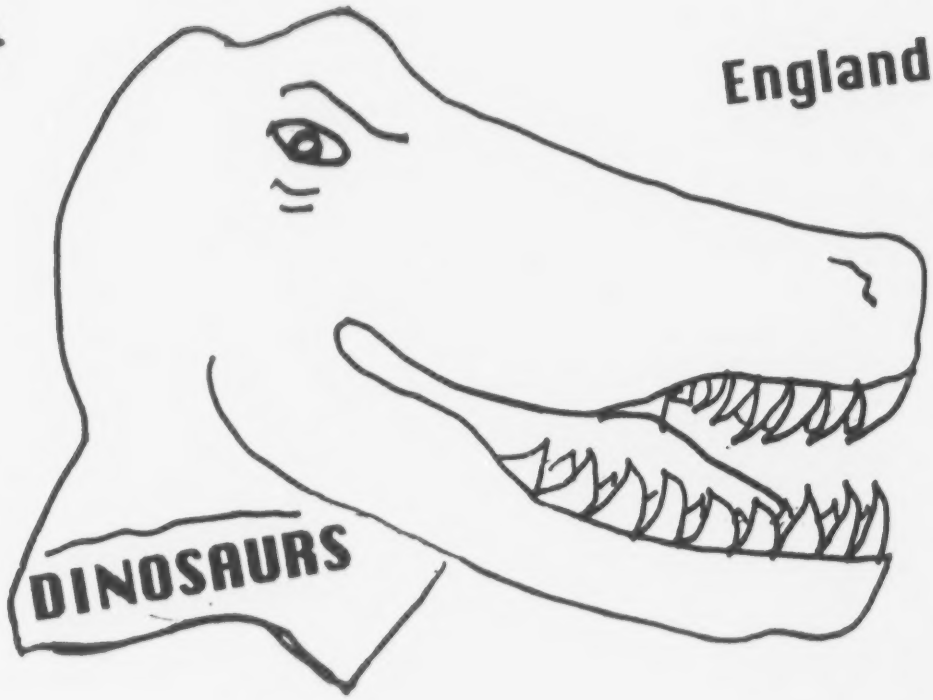
Dinosaurs have many unusual features. Some had strange plates covering their bodies for protection, like the Ankylosaurus. Some dinosaurs had very long necks and small heads; while others had large snouts with horns attached, like the Triceratops. Many dinosaurs were very large and moved very slowly, such as the Brachiosaurus.

Dr. Owen

nests

Mesozoic

meat



England

fossils

plates

1674

lizard

plant

paleontologist

1841

era

300

77

Dino...Did You Know?

Materials:

reference books	dinosaur books
construction paper	binding supplies
markers	pencil

Procedure:

1. Each group researches to find interesting and unusual facts about dinosaurs, ending with an illustrated dinosaur booklet. The booklet needs to contain 10 facts and illustrations.

2. Each member finds 3 facts for the group to decide upon. At least 2 facts from each member should be included.

3. An unusual fact is written or typed on a single sheet of paper with an illustration to match.

4. The booklet also needs a cover page with title, team name, and individual names. The booklet may be stapled, bound with rings, yarn, etc.

Examples of possible facts:

Did you know that Hadrosaurs or duckbilled dinosaurs had as many as 2,000 teeth used for grinding plants?

Did you know that the tail of a Stegosaurus could be called a dangerous weapon?

Did you know that Othniel Marsh discovered the first pterodactyl found in the U.S. in 1871?

Did you know that scientists think dinosaurs were reptiles?

Did you know that scientists think the crocodile was the dinosaurs' closest living relative?

Did you know that the smallest dinosaur was probably the Mussaurus, or mouse lizard, and was about 8 inches long?

Dino Double Trouble
Tongue Twisters

Materials:

paper	reference books
thesaurus	dictionary

Procedure:

1. Using simultaneous Roundtable, each team member has a sheet of paper and begins writing a tongue twister sentence about the team's designated dinosaur.

2. The papers are passed around the group while each team member adds a word to the twister sentence. This continues around the table until the sentence is complete.

3. The team members use reference books, dictionary, and thesaurus for help.

4. At least one fact should be within the sentence. Each member edits and illustrates his/her own final copy. A team booklet may be made to display.

EXAMPLES:

Brave Barney Baryonyx bites with big, bad teeth.

Silly, Sally Stegoceras, not Sandy Stegosaurus has a skull six inches thick.

What If Our Dinosaur Came Back to Life?

Materials:

paper	pencil
drawing paper	markers
construction paper	reference books
dinosaur books	glue
scissors	binding supplies

Procedure:

1. Each group writes a short story about how life would be different if their researched dinosaur came back to life.

2. Each story needs a cover page, several illustrations, text, and back page.

3. The students begin by numbering off and working on the corresponding numbered job:
   - #1 starts the cover page, including the title, team name, individual names, and small illustration
   - #2 starts an illustration page, including dinosaur picture, border
   - #3 starts the story, "Once upon a time...," "Guess what happened on my way home?"
   - #4 starts the back page, including questions or a brief summary with a picture

4. After approximately 8 to 10 minutes the students pass that job around in a clockwise rotation. This process continues until each person has worked on each facet of the story, returning the work to its origin.

5. Then each person continues the original job, edits the work, and completes a final draft for publication.

6. The group may bind their book with yarn, plastic rings, etc.

Dinosaur Archaeological Dig

The purpose of this cooperative activity is to reenact an archaeological dig and then to categorize the discovered dinosaurs into plant-eaters and meat-eaters.

Materials:

- bucket with sand
- toothbrush
- small, plastic dinosaurs
- paper bag
- yarn
- small shovel or scoop
- dinosaur chart
- lined paper
- hole puncher
- reference books

Procedure:

1. The team members prepare their work area for a "dig," covering the work place with old newspapers, plastic, etc.

2. One team member selects the "dig" from the teacher. (The dig is actually several dinosaurs buried under sand in a plastic bucket. The teacher may choose to demonstrate how an archaeologist carefully digs, using the toothbrush to brush away the sand particles.)

3. Each team member takes a turn digging for a dinosaur with the scoop and toothbrush, carefully moving the dirt, without disturbing anything.

4. After unearthing a dinosaur, the student archaeologist discusses with his/her team the dinosaur's characteristics.

5. The activity continues until all dinosaurs are unearthed and the chart is completed.

6. The students then make a diary to record their exciting events!

Archaeological Dig Chart

Examine your dinosaur, checking the chart below and determine which type of dinosaur you have unearthed. Is it a plant-eater or a meat-eater?

Meat-Eaters	Plant-Eaters
Big head/jaw?	Small head/jaw?
Walks on 2 legs?	Walks on 4 legs?
Sharp teeth?	Flat teeth?
Big hind legs?	Armor, horns?
If all answers were yes, you discovered a meat eater.	If almost all answers were yes, you discovered a plant eater.

****

1. How many dinosaurs in your dig were meat eaters?_____
2. How many dinosaurs in your dig were plant eaters?_____
3. Were you able to identify any dinosaurs by physical features?____
4. If so, what dinosaurs did you discover?

Team Name _____
Archaeologists:

Archaeological Dig Diary

Part two of the dig involves making an archaeological diary of fictitious events.

Materials:

brown paper bag	pencil
markers	paper

Procedure:

1. Take a brown paper bag; crumple, dampen and lay it out to dry. Use this brown paper bag to design and decorate as a diary cover, complete with lock and key or string to secure it.

2. Next, brainstorm events that could happen on an archaeological dig today, in the past, or in the future.

3. Each team member records a day in the life of the dig. The following needs to be included in the diary: the date the dinosaur or bones were discovered, the approximate time of discovery, the location of the dig, and a sketch of the dinosaur.

A sample of a diary page:

****

Date_____

Time_____

Location_____

Sketch of the Dinosaur:

The events of the BIG DAY:

Travel Brochures to the Land of the Dinosaurs

Materials:

reference books	dinosaur books
tagboard / drawing paper	crayons, markers
brochures from travel agency	

Each group writes and illustrates a travel brochure for the period in the Mesozoic Era (Triassic, Jurassic and the Cretaceous periods). The brochure should include land formations, climate, plants and animals of that period, and the tour's itinerary.

Procedure:

1. The teacher or group divides the job responsibilities within the group. A team member may have more than 1 job.) The **Recorder** writes responses on paper; the **Researcher** checks or verifies facts in reference books; the **Illustrator** draws background and detail pictures; the **Fashion designer** adds color to the illustrations; the **Time keeper** keeps group on task; and the **Encourager** ensures all members are participating.

2. Decide upon a name for your Travel Agency, be creative.

3. Brainstorm in group reasons why tourists should visit this time period-Recorder lists reasons as all team members participate. Decide on brochure layout: pages, like a booklet, folded in half or thirds, or poster form?

4. After brainstorming, divide up the work. The researcher checks data: vegetation, climate, and other animals. The recorder writes persuasive sentences and paragraphs luring tourists. The illustrator draws pictures of that time period. The fashion designer adds color using paint, markers, crayons, colored pencils, fabric, etc. The timekeeper keeps group on task, as encourager ensures all members participate. Complete rough drafts.

5. Meet in group to offer suggestions, edit, and begin final copy.

6. As a travel agent for your company, make a formal presentation of team's travel brochure.

Dinosaur Graphic Organizer

Materials:

reference books pencil graphic organizer

Procedure:

1. As a group, complete the graphic organizer on the dinosaur, using reference books. (Students may design a chart of their own, possibly in the shape of the dinosaur researching.)

2. Each student chooses a number and researches that specific dinosaur topic. Do not write complete sentences, but just jot down notes.

Student	Topic	Information
#1	Appearance	What does it look like? Size
#2	Habitat	Where is its home? In group?
#3	Food	What, how, where is its food?
#4	Protection	How does it protect itself?

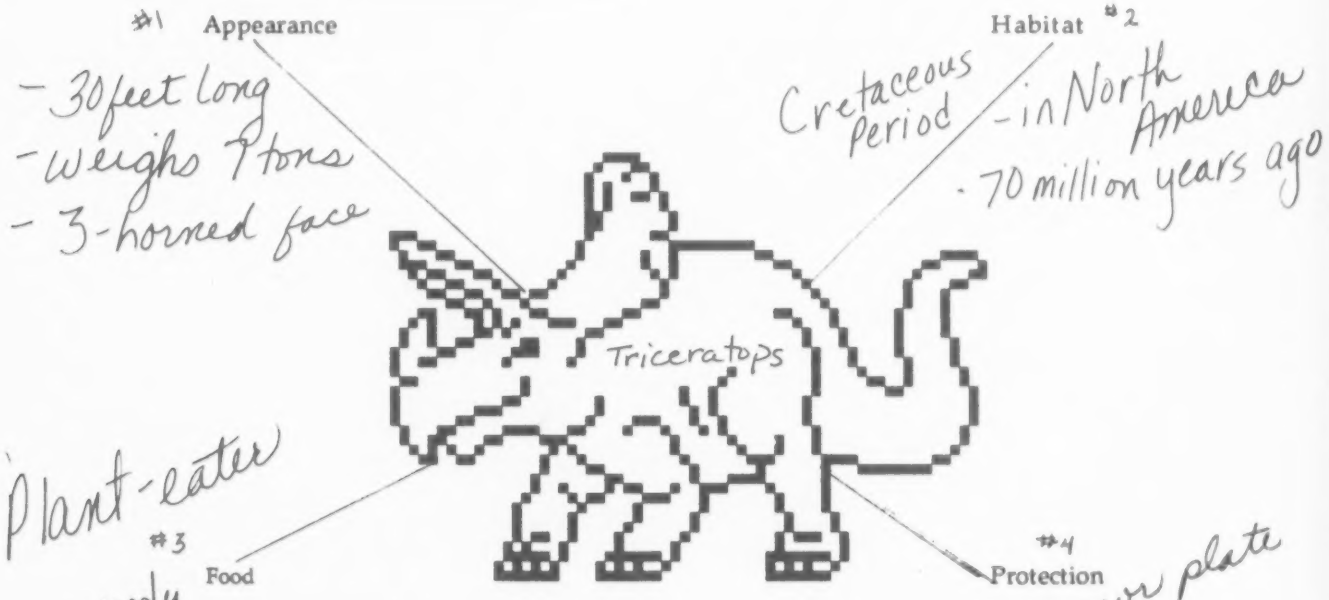
3. Each student should keep track of the books used for the bibliography:

Book: Author _____, Title _____,
Publisher _____, Place _____, Date _____.

Encyclopedia: Title _____, Volume _____,
Publisher _____, Place _____, Date _____.

Dinosaur Graphic Organizer sample

Team Name _____



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Dinosaur Shape Book

Materials:

Dinosaur Graphic Organizer	Paper
Posterboards	Coloring tools
Various art materials	Scissors, glue

Using the research obtained on the graphic organizer, each student writes up an informational paragraph on his/her topic. Share completed paragraph within group, offering suggestion for improvement (stay on topic, using topic sentence, adding detail sentences, using a variety of sentence beginnings). Allow time to edit paragraphs, remembering the following: indenting, capitalization, punctuation, spelling check. If possible, use a word processor. Before final copy:

1. Cut posterboard into a large shape of dinosaur, (You may need to use overhead projector) making the booklet's cover. Add texture to booklet using cloth, sandpaper, colored markers, etc.

2. Cut ruled and unruled paper into dinosaur shapes, using the posterboard as a guide. Make the ruled and unruled paper approximately 1/2 inch smaller all around. These pages will be used for the informational paragraphs and for illustrations.

3. Each member writes a final draft on the ruled pages, or types and pastes it on unruled pages.

4. Each member draws an illustration relating to his/her topic.
Example: Appearance-draw the dinosaur
Habitat-draws the home or landforms of the area
Food-draws pictures of the food it eats
Protection-illustrates how the dinosaur protects itself

5. Make a Table of Contents

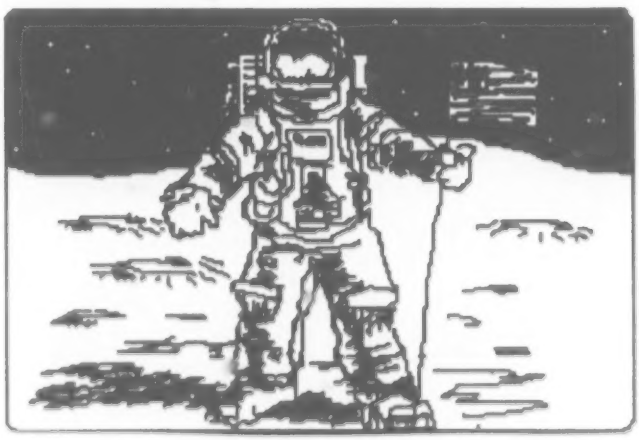
6. Include the Bibliography page, listing all books, encyclopedias, and reference materials used.

7. Bind the booklet together.

Space Unit

Each team will work to complete the following activities. Upon completion of each activity, write in the date completed.

ACTIVITY	Date Completed
1. Line up---Zodiac	_____
2. Team Formation	_____
3. What's Your Sign	_____
4. Constellation Capers	_____
5. Create a Constellation	_____
6. The Life of a Star	_____
7. Types of Galaxies	_____
8. Space Riddles	_____
9. Space Crossword Puzzle	_____
10. Design a Space Station	_____
11. Space Jeopardy Game	_____
12. Creature Features	_____
13. Planetary Research	_____
14. Planetary Quality Initials	_____
15. Planetary Guess a Fib	_____
16. Build What I Write	_____



Space Activity Evaluation

Each group completes a processing or evaluation sheet upon completion of a space activity. Team members within each group should take turns recording the group's responses. (Individual groups may choose to design their own processing sheet.)

Group Name_____
Activity _____ Date _____

Team Members _____
_____
_____
_____

****

Rate your group from 1 to 5 on the following skills: (See chart below)

1 2 3 4 5

Working quietly ___ because _____.
Group participation ___ because _____.
Understanding concept ___ because _____.

Teacher comments:

Line Up---Zodiac

For this activity, the students line up according to their birthday month and date in chronological order.

Materials:

Zodiac Reference Guide

Procedure:

1. The teacher indicates where the beginning and end of the line up should occur. Discuss with the class how much easier it will be to figure out the month first, then the exact date.

2. The students stand and move towards the line when signalled.

3. The students are not allowed to talk during this line up activity, but may use hand signals.

4. Following the line up, add the students' names to a zodiac class calendar.

Zodiac Reference Guide

Capricorn	(December 22-January 20)
Aquarius	(January 21-February 19)
Pisces	(February 20-March 20)
Aries	(March 21-April 20)
Taurus	(April 21-May 21)
Gemini	(May 22-June 21)
Cancer	(June 22-July 23)
Leo	(July 24-August 23)
Virgo	(August 24-September 23)
Libra	(September 24-October 23)
Scorpio	(October 24-November 22)
Sagittarius	(November 23-December21)

Zodiac Calendar of Class Birthdays

***Place the students in the month of their zodiac sign. (Also add an illustration depicting that sign.)**

Capricorn	**Aquarius**	**Pisces**
Aries	**Taurus**	**Gemini**
Cancer	**Leo**	**Virgo**
Libra	**Scorpio**	**Sagittarius**

Team Formation

Each team will be composed of three to four students with the same Zodiac sign if possible. If not, pair the students up with the sign closest to them. (Example: Capricorn and Aquarius, Pisces and Aries.) Now it is time to "Design a team name."

1. After forming your new groups using Zodiac line-up activity, you need to develop a team name, a poster and folder for your team.

2. Using the question below and the **Roundtable** format, students take turns writing in their responses in respective areas:

1. What is your favorite star or constellation?
2. What is your favorite mode of planetary transportation?
3. Who is your favorite astronaut?
4. What is your favorite planet?
5. Do you believe there are life forms on other planets?
6. Would you like to become a space traveler?
7. What was your favorite science fiction movie?

Member 1	Member 2	Member 3	Member 4	Common Responses

3. Find all of the common responses and think of a creative name using at least 2 or 3 common responses.

4. Check with your teacher when you have developed your team name. Then create the poster or scrapbook cover. This poster and folder cover needs to include the team name, a picture representing the name, and the names of individual team members. Each member needs to take part in the poster and folder cover creation.

What's Your Sign

Materials: Zodiac Reference Guide
Newspaper Horoscope section
Paper, pencil
Colored markers, colored pencils, etc.

Procedure:

1. Each team creates a Horoscope Newsletter using the Zodiac Reference Guide for the dates. The students may study the types of comments made in the newspapers and may also bring in other horoscope reference materials.

2. The students write "upbeat" and positive comments for their horoscope writing.

3. A word processing program with a newsletter format might be used. If one is not available, make up your own newsletter format, adding colorful art work.

4. The team may choose to make a mini-book format, by cutting posterboard and paper to make a booklet about 3 inches by 5 inches. This booklet needs to be bound together.

Example:

Scorpio (October 24-November 22) Take care of yourself and don't forget to bundle up when the weather is bad. You don't want to miss that important outing and the chance to meet a special friend.

Constellation Capers

Through the ages, star watching has been very popular and brought us a lot of folklore. As the different cultures stared into the night sky, they saw various patterns and shaped formed by the stars. Often times, they told stories of these stars to their children.

Materials:
- Constellation reference books
- Writing paper
- Pencil
- Drawing paper
- Markers, colored pencils

Procedure:

1. The students will write a fictitious story about a specific constellation of their choice. Depending upon location, the constellations appear differently. For instance, if you live in the Northern Hemisphere you will see one set of constellations, and if you live in the Southern Hemisphere you will see a different set of constellations.

2. Possible constellations to choose from are: Ursa Major, Ursa Minor, Draco, Cassiopeia, Cepheus, Crux, Centaurus, Taurus, Canis Major, Orion, and Leo. The students might discuss the shapes the stars within the constellation make.

3. Possible questions to stimulate the thinking:
   1. What creature could this shape be?
   2. Where did this creature live?
   3. What possible predators did the creature have?
   4. What means of protection did the creature have?
   5. Did this creature live alone or with a group?
   6. What did the creature like to do?
   7. What happened to the creature.

Create a Constellation

Materials:

- cereal box
- flashlight
- tape, glue
- black construction paper
- chalk
- pencil
- reference books

Procedure:

1. The students choose a constellation to create using the reference books.

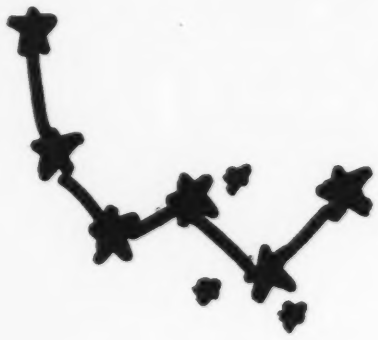
2. Using white chalk, draw the constellation on the black construction paper. Also write the name on the paper.

3. Attach the black construction paper with drawing on an empty cereal box.

4. Punch holes through the cereal box and paper along the chalk markings with a compass point.

5. Finish covering the rest of the box with construction paper.

6. To view the constellation, place a flashlight inside the cereal box and turn on. (You may want to "highlight" the constellation by outlining in white around the holes.)



The Life of a Star

Materials:

Reference books
Overhead Transparencies
Overhead Marking Pens (various colors)
Books on Stars

Procedure:

1. Research the different stages of a star. There are several different paths a star could take, and different stages in each development. You could choose: Red Dwarfs, Blue Giants, Yellow stars like our sun, Neutron stars, Supernovas, or the Black Hole.

2. Choose which type of star you will study.

3. Record the different stages of your chosen star.

4. Create a visual presentation using drawings on overhead transparencies to illustrate the different stages of development that star.

Take notes below:

Type of Star: _____

Types of Galaxies - Graphic Organizer

Materials:

reference books on galaxies
paper
pencil
colored pencils
poster paper
markers

Procedure:

1. The team researches the different types of galaxies: elliptical, spiral, and irregular galaxies using the reference books.

2. The team records the similarities and differences of these galaxies.

3. The team brainstorms how to arrange these facts on poster paper in a pictorial (graphic organizer) fashion.

4. The team creates a graphic organizer to show similarities and differences of the elliptical, spiral, and irregular galaxies.

5. The team decorates the poster, adding a title, team name and individual names.

Space Riddles

Materials:

reference books	space books
paper	pencil
markers	drawing paper

Procedure:

1. The team researches information about space.

2. The team brainstorms and records space terms or objects found in space.

3. The team chooses five terms to use in this activity.

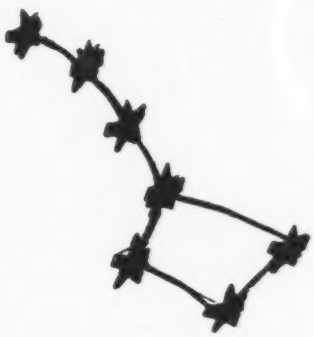
4. The team writes riddle clues for each term. Each riddle needs three clues.

5. The team may choose to write the riddles on poster paper, illustrate, decorate and display.

Example:

1. I am a snowball of ice and dust.
2. I was seen in the sky in 1986.
3. I take about 76 years to complete my journey in space.

What am I? (Answer: Halley's Comet)



Space Crossword Puzzle

Materials:

- Silhouette of Planet or Space ship
- Research Books
- Sample crossword puzzles
- Posterboard
- Graph paper

Procedure:

1. Trace the shape of a planet or rocket ship on a piece of posterboard. As a group, find 10 to 15 words associated with space.

2. One person is chosen to be the recorder and is to write down all the words during the brainstorming/research activity. The other members are to browse through the research books for important space terms.

3. After the brainstorming session, the students write clues for the chosen space terms. Once the clues are formulated, the students begin to create their crossword puzzle. Graph paper is an excellent tool for creating crossword puzzles. The boxes for the words can be written horizontally or vertically. Teams may refer to crossword puzzle examples for help.

4. Divide up the team responsibilities: Creating silhouette, writing/typing clues, drawing boxes on graph paper for puzzle, and checking accuracy.

5. When finished, paste the puzzle on the space silhouette. Make sure your team name appears on the puzzle. Have the teacher duplicate the puzzles for the classroom.

Design a Space Station

Materials: Graph paper data sheet
Research books

After researching space stations, decide the various compartments, needs and purposes of your station. Your group will design and construct a miniature space station. Information concerning space stations space books, science textbooks, and reference books. Consult your teacher and local library.

Data Sheet

Group_____
Space station name_____
Date construction began _____ Construction completed _____

**Complete the Materials Chart below, describing the necessary materials, where the materials can be obtained, possible costs, and team member responsibilities:

Materials Chart

Materials/Tools	Source	Cost	Team member

Space Station Procedure:

List the steps your group will take to complete the space station and the member responsible. Number the steps in the order you will complete them:

_____

_____

_____

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Conclusion/Analysis:

Based on research, rate your product (space station) on a scale of 1-4. (1=poor, 2=good, 3=very good, 4=excellent) Support your information.

Science Group _____
Space Station Name: _____
Rating given: _____
Reasons for rating: _____

Space Station Tour

Upon completion of group's Space Station, conduct a class tour of the various space stations.

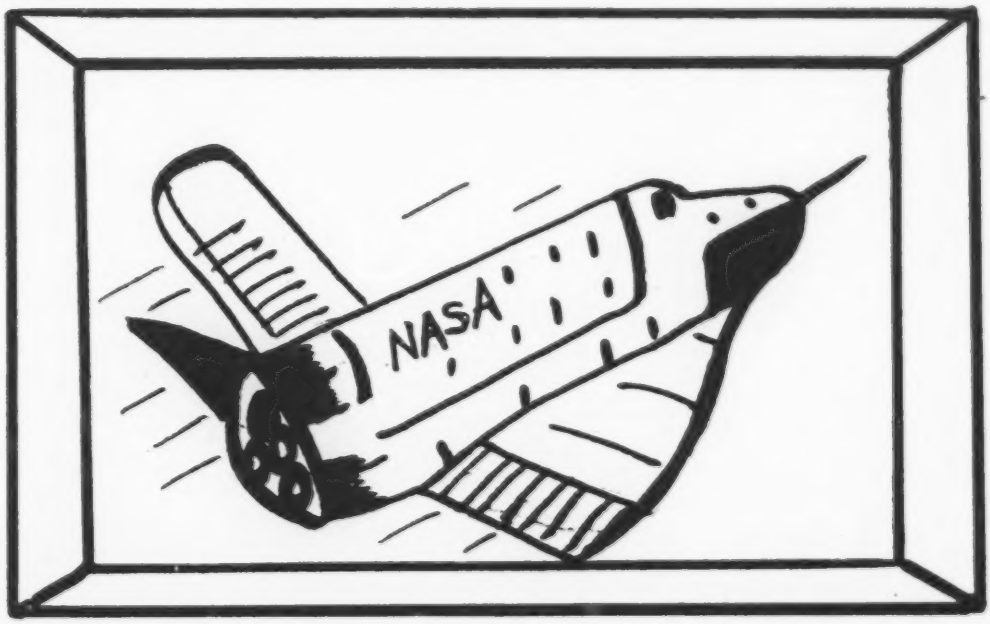
Procedure:

1. Each group may design a poster, flyer, or a 2-3 minute audio or video commercial to be placed adjacent to the space station designed.

2. The groups simultaneously tour each station (with all pertinent information available) as a group, spending 5 minutes at each station.

3. During this time, the group will move in a directed fashion from exhibit to exhibit ending at their own to read the comments written by fellow groups. It is best to space the work in a circular pattern around the room to avoid congestion, having the groups move in a clockwise fashion.

4. As the groups tour the different space stations created, each group responds in writing with positive comments in regards to the construction of the space station.



Space Station Tour Comment Sheet

Team Responsible: _____
Space Station Name: _____
Group Commenting: _____
Construction Comment _____

Team Responsible: _____
Space Station Name: _____
Group Commenting: _____
Construction Comment _____

Team Responsible: _____
Space Station Name: _____
Group Commenting: _____
Construction Comment _____

Team Responsible: _____
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Group Commenting: _____
Construction Comment _____

Team Responsible: _____
Space Station Name: _____
Group Commenting: _____
Construction Comment _____

Team Responsible: _____
Space Station Name: _____
Group Commenting: _____
Construction Comment _____

Space Jeopardy Game

The teams create a game board similar to the syndicated Jeopardy game, with 5 columns and 5 rows of questions. (It might be wise to create pockets to hold the questions so they can be changed periodically.) The team will be responsible for creating question and answer cards of varying difficulty:

5 point questions--simple recall questions
10 point questions--minimal difficulty
15 point questions--average difficulty
20 point questions--above average difficulty
25 point questions--very difficult questions

Sample gameboard with a few questions exposed:

	S	P	A	C	E
5 pts	Name the center of the Milky Way Galaxy.				
10 pts	Name the most recent astronaut in space.				
15 pts	Who was the first person on the moon?				
20 pts	Name the gases found on Mars.				
25 pts	Who discovered Pluto?				

Creature Features

Materials:

- ruled paper
- pencil
- colored pencils
- Creature Feature Sheet
- ink pen or computer
- glue
- scissors
- unruled paper
- posterboard

Procedure:

1. Each team member completes a Creature Feature Sheet. In the first row across create three different heads of creatures, being creative, colorful and imaginative (multiple eyes, noses, ears, antennae, etc). In the second row draw and color three torsos including arms, wings, or fins. In the final/third row draw and color the bottom section of your creature adding legs, tails, wheels, or fins.

2. Next, as a team, cut up the different sections of the creatures and put in respective piles: heads, torsos and bottom sections.

3. Each person selects one head, one torso and one bottom section from the pile, and glues the creature together on a sheet of unruled paper.

4. Cut the creatures out and brainstorm a story idea using all the team's creatures.

5. Decorate a scene or background on the posterboard and write a team story.

6. The final copy should be typed or written in ink.

7. Attach the story to the posterboard, including all the names of team members, creature names, and story title.

Creature Feature Sheet

Planetary Research

Materials:

books on the planets
encyclopedias
reference books
paper
pencils

Procedure:

1. The teacher will decorate a box to represent the sun.

2. Place in the names of the planets (not Earth) to be researched.

3. Each team will draw out a name of the planet to research, write and present information about.

4. Next the team brainstorms questions to research about the planet chosen, such as: its size, atmosphere, number of moons orbiting, etc.

5. The team organizes the information researched.

6. The team will create a graphic organizer or chart showing similarities and differences between the planet and Earth.

7. The team will use the information in step 6 to write paragraphs describing the similarities and differences between Earth and the planet they had chosen.

8. The team creates a booklet containing the following: cover, table of contents, illustration of planet, illustration of solar system with the planet highlighted, paragraphs including similarities and differences with Earth and bibliography of reference books used.

Planetary Quality Initials

Materials:

paper
markers
dictionary
pencil
reference books

Procedure:

1. The team uses its researched planet to design its **Quality Initials.**

2. This activity involves using the Planet's initial and adding another word or two, beginning each word with the planet's first letter.

3. The team brainstorms possible words beginning with the planet's first letter. (a dictionary may be helpful)

4. The team chooses terms from the brainstorming activity and verifies the spelling of the terms.

5. A final copy is made and colorfully illustrated.

Example:

Energy-conscious
Earth

or

Ecological
Earth

or

Energetic
Earth

Planetary Guess a Fib

Materials:

- Reference books on Planet
- Paper
- Pencil
- Notecards

Procedure:

1. The students will Roundtable this activity after reviewing information about the planet. The team will pass 1 sheet of paper and one pencil around the table 4 times.

2. The first 3 times, each member will write a valid, true fact about the planet, making sure no duplicates are written.

3. The 4th time, each member will write an invalid or false statement about the planet, again making sure no duplicates are written.

4. Next, the students decide which 3 facts and 1 "fib" will be written on a notecard with the "fib" noted on the back of the notecard.

5. The team may choose to write more than one notecard with responses.

6. The different teams can challenge one another to a Guess the Fib Contest. Also, a bulletin board display could be made, featuring many of the teams' work.

Example:

1. The Earth is the third planet from the Sun.
2. The Earth has humans and animals living on it.
3. The Earth's atmosphere is made up mostly of dense carbon dioxide, helium, and methane gases.
4. The Earth's diameter is 7920 miles.

Answer: number 3 is the "fib."

Build What I Write

Materials:

pencil & paper
teacher-designed creatures labeled A and B
designated kits marked A and B containing:
marshmallows-small and large, thin pretzel sticks, and soft candy, or tinker toys could be used

Procedure:

1. Prior to class, the teacher creates two different alien-type creatures using marshmallows, thin pretzel sticks and soft candy, preferably colored.

2. The students then divide up into teams of two, Partner A and Partner B.

3. The A group views creature A while B group views creature B.

4. Each group has 2 minutes to look at the creature, without touching it.

5. Then each group has 5 minutes to write the directions on how to construct the creature, no illustrations or drawings are allowed. Review terms such as horizontal, vertical and diagonal.

6. After the time limit, the creatures are put away.

7. Partner A receives directions and kit B from Partner B to make creature B. Partner B receives directions and kit A from Partner A to make creature A. All partners are to wait until everyone has a kit and a set of directions.

8. The individuals then have 5 minutes to put together the creature from their partner's set of directions.

9. After the time period has elapsed, display the different creatures so the partners can see how well the creatures were made to their set of directions.

Resources:

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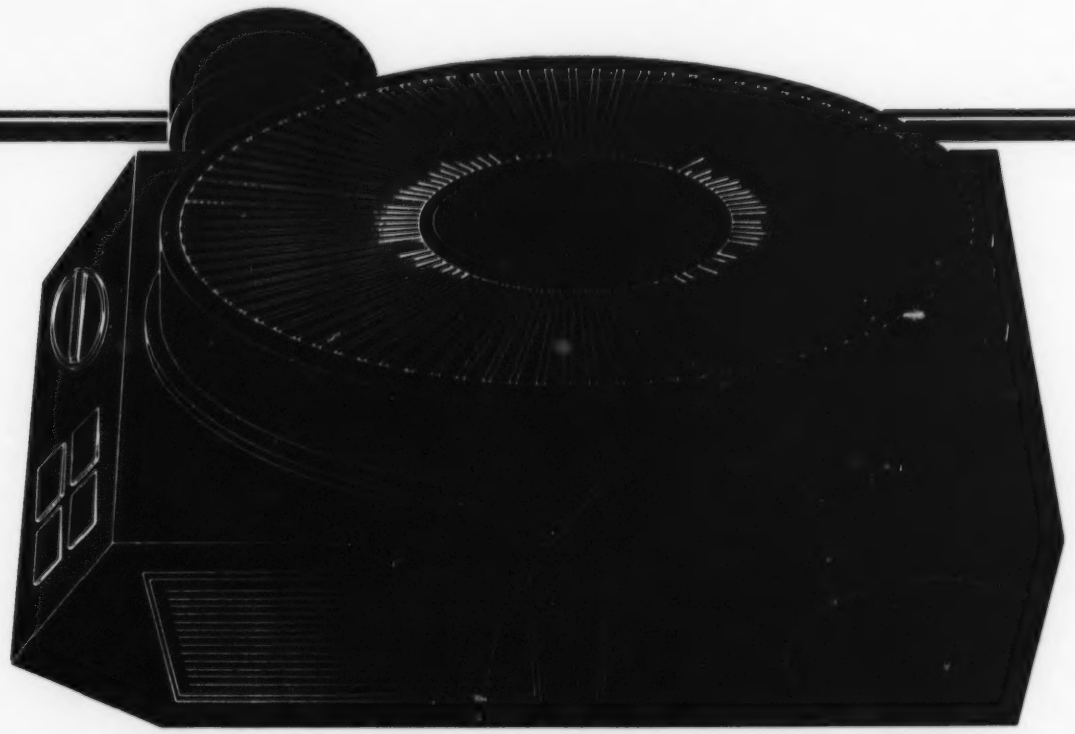

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